This Issue Exceeds 99,500 Copies

THE JOURNAL

OF THE

American Medical Association

Subscription, $8.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 112, No. 7 | COPYRIGHT, 1939, BY AMERICAN MEDICAL ASSOCIATION 535 North Dearborn Street, Chicago, Ill. | FEBRUARY 18, 1939

CONTENTS AND SUBJECT INDEX

The Prevention of Deafness. S. J. Crowe, M.D., and John W. Baylor, M.D., Baltimore.....585

Horse Serum Neuritis. A. E. Bennett, M.D., Omaha.....590
Discussed by Drs. Freeman, Doyle, Vener, Viets, Throckmorton, Brahdy, Ziegler and Bennett.

Primary Carcinoma of the Ureter. Alvin G. Foord, M.D., and Paul A. Ferrier, M.D., Pasadena, Calif..596

Hematogenous Tuberculosis and Silicosis. Jacob Gershon-Cohen, M.D., and Louis Cohen, M.D., Philadelphia 602
Discussed by Drs. Hodes, Slyfield, Pierson, Gershon-Cohen and Cohen.

The Management of Tuberculosis of the Cervix Uteri. D. C. Collins, M.D., Los Angeles.....605
Discussed by Drs. Emge, Schmitz and Collins.

X-Ray Diffraction Analysis as Applied in Pneumoconiosis. H. C. Sweany, M.D., and Rosalind Klaas, Ph.D., Chicago.....610

Operative Injury to the Anal Sphincter. Paul C. Blaisdell, M.D., Pasadena, Calif.....614
Discussed by Dr. Hill.

Medical Aspect of Cancer of the Stomach. Sara M. Jordan, M.D., Boston 618
Discussed by Drs. Cunha, Underwood and Jordan.

Fractures of the Lower End of the Humerus. George J. Garceau, M.D., Indianapolis.....623
Discussed by Drs. Dorman, Spiers, Key, Jones, Stewart and Garceau.

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Loss of Subcutaneous Fat of the Lower Extremities (Lipodystrophy). John A. Bigler, M.D., Chicago 627

Ruptured Tubal Pregnancy: A Helpful Diagnostic Sign. Leo Brady, M.D., Baltimore.....628

COUNCIL ON PHYSICAL THERAPY 629

EDITORIALS

The American Medical Association Study of Medical Care.....630

Bronchiectasis 630

Traumatic Fat Necrosis of the Breast 631

Opportunities for Intensive Graduate Training in Obstetrics.....632

CURRENT COMMENT

Georgia Physicians and Health Officials Study Together.....632

BUREAU OF LEGAL MEDICINE AND LEGISLATION 667

(Subject Index on next page)

ORGANIZATION SECTION

Health Insurance with Medical Care: The British Experience.....633

Legislation of Interest to Physicians Considered by State Legislatures in 1938.....636

Congress on Industrial Health...641

Medical Legislation.....647

A.M.A. SESSION — St. Louis — MAY 15-19, 1939

Buie's Practical Proctology

This unusual book is *truly* practical! It is a full and detailed record of Dr. Buie's experience with thousands of anorectal cases at the Mayo Clinic—a clinical discussion that is today giving thousands of physicians, surgeons and specialists exactly the kind of guidance they seek.

You will follow Dr. Buie eagerly, expectantly as he leads you step by step through each detail of diagnosis and treatment. He describes the various methods of examination, including proctoscopy—guiding you in what to look for, what to expect and what the findings mean.

Of particular importance—and certainly one of the most enthusiastically welcomed features of this book—is the attention Dr. Buie gives to *Treatment.* Here are the *medical and surgical* methods—office as well as hospital procedures—that the author himself is using in his own extensive practice. For example, he gives the *Injection Treatment of Hemorrhoids* as well as the technic of hemorrhoidectomy. He tells you just how to use his *Injection Treatment of Anal Pruritus*—a treatment that has proved successful in 92% of the cases treated. Dietary measures and serum and vaccine injections for *Chronic Ulcerative Colitis* are included as well as the nonoperative and operative treatments of Anal Fissure and Anal Fistula, fulguration treatment of Polypoid Disease of the Colon and the operative treatment of Pilonidal Disease. Discussions are included on malignant diseases, venereal diseases, amebic dysentery, tuberculosis of the anus and rectum, preoperative and postoperative care; and there is a chapter on dietary formulas and prescriptions.

By Louis A. Buie, A.B., M.D., F.A.C.S., Head of Section on Proctology, The Mayo Clinic; Professor of Proctology, The Mayo Foundation, University of Minnesota. Octavo of 512 pages, with 152 illustrations, 6 in colors. Cloth, $6.50 net.

See Also SAUNDERS ADVERTISEMENT on Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics; "OS," Organization Section; "SS," Student Section.

A. M. A. Annual Congress on Industrial Health OS-641
study of medical care E-630
Acid, cholic, elimination, in healthy ab-680
cholic, elimination in jaundice ab-680
Acne vulgaris, androgen treatment ab-672
Allergy and stammering ab-675
serum neuritis *590
trichloroethylene dermatosis ab-677
Altitude, high, effect on vitamins and ferments in blood ab-677
Androgens for acne vulgaris ab-672
for functional bleeding ab-672
Anthrax immunity ab-678
Anus, surgical injury to sphincter *614
Appendectomy scar discolored in ruptured tubal pregnancy *628
Appendicitis, peripheral neuritis after 663
Arsenic weed killer, boils from 662
Arthritis, treatment, new gold salt ab-675
Asthma cause of heart failure 661
pathogenesis; treatment ab-676
Research Council report 656
treatment: desensitization; exercises; short wave diathermy 656
Atrophy, muscular, from tetanus antitoxin *593
Autopsies: coroner's right to perform Ml-667
Aviation, air raid precautions, England 656
Bacteria funduliformis septicemia 657
urea splitting, role in calculi formation ab-673
Bartholomew, R. A., Fischer award to 652
Bibles in Braille 663
Blindness, National Society for Prevention of OS-646; 655
Block Memorial Lecture by Dr. Canavan 652
Blood, hematogenous tuberculosilicosis *602
hemoglobin determination in ab-679
hydremia and chloridemia, vitamins for ab-677
precipitinogen in prior to rheumatism ... ab-673
pressure, high, effect on kidneys ab-676
vitamins and ferments in ab-677
Board Examinations 664
Book Notices 665
Books Received ..... Adv. page 34
Brackenbury, H. D., health insurance ... OS-633
Brain, surgical removal of epileptogenic cortical scars ab-671
Breast, traumatic fat necrosis E-631
Bronchiectasis E-630
Bureau of Investigation 661
Bureau of Legal Medicine and Legislation .. 667
Canavan, Myrtelle M., Block Lecture by 652
Cancer, American Society for Control of 655
display at Golden Gate Exposition 652
Cesarean Section, respiratory failure in 663
Children, school, social conditions, Rumania .. 659
Climate and life 658
rheumatism and 658
Cold and heart disease ab-669
Colvin, E. D., Fischer award to 652
Council on Physical Therapy 629
Cullen's Sign in ruptured tubal pregnancy . *628
Deafness, prevention *585
Deaths 660
Dementia Praecox, insulin shock in, effect on eye ab-678
Diabetes Mellitus with hyperthyroidism ... ab-671
Diplomas, foreign, Rumania 658
Drugs, state laws on OS-636
Duodenum, megaduodenum, etiology ab-678
Edema, angioneurotic, of tongue and eyes ... 662
Elbow, fractures *623
Encephalitis outbreak from equine encephalomyelitis virus ab-669
Endometrium, aberrant, clinical aspects 657
Epilepsy, cortical scars: surgical removal . ab-671
Eustachian Tube partial obstruction cause of impaired hearing *585
Extremities, lipodystrophy *627
Eyes, insulin shock treatment effect on ... ab-678
involvement in angioneurotic edema 662
tests of A hypovitaminosis in children .. ab-676
Fat, subcutaneous, loss of *627
necrosis (traumatic) of breast E-631
Fever, field or harvest ab-678
Fistulas, anal, operative injury *614
Foreign Letters 656
Franklin-Gulf County Medical Society 652
Furunculosis from arsenic weed killer 662
Georgia physicians and health officials E-632
Gill, A. B., Robert Jones Lectures by 654
Granite workers' nasal resistance in breathing ab-673
Gynecology, American Congress on 655
Halsey, fraudulent salesman 655
Hartwell, John A., appointment 655
"Harvest" fever ab-678
Harvey Lecture by Dr. Park 654
Hay Fever, treatment, vitamins of no benefit . 662
Health department sponsors educational programs 652
officers, changes in, Florida 652
officials and physicians, Ga. E-632
poster contest, Pa. 654
public, interest in industry ab-643
public, supreme council, Rumania 659
publications, new 655
Hearing, impaired, from partial obstruction of eustachian tube *585
Heart disease and climate ab-669
electrocardiography, unusual atrioventricular rhythms ab-669
insufficiency, asthma cause of 661
Hemoglobin, determination in undiluted blood ab-679
Hospitals, fees; detention of patient for nonpayment Ml-668
Gallinger, building program 652
state bills affecting OS-636
Humerus, fractures of lower end *623
Hyperthyroidism, diabetes complicating ... ab-671
Indexes, medical, by WPA 655
Industrial dermatosis from trichloroethylene ab-677
employability of person with perirectal sinus. 663
granite workers' nasal resistance in breathing ab-673
"harvest" fever ab-678
Health, Annual Congress on OS-641
hematogenous tuberculosis and silicosis ... *602
pneumoconiosis *610; ab-641; ab-670
public health interest ab-643
recurrent boils from arsenic weed killer ... 662
x-ray diffraction analysis of silica and quartz in lung tissue *610
Infants, newborn, death from respiratory failure in 663
vitamins for hydremia and chloridemia . ab-677
Infectious Diseases, vitamins and ferments in blood in high mountains ab-677
Influenza, outbreak, Chicago 653
Insanity, mongolism, physical development . ab-671
Insurance, HEALTH INSURANCE WITH MEDICAL CARE OS-633
health, state laws OS-638
hospital, state bills on OS-636
Intestines diverticulitis, late results ab-675
Ireland, Merritte W., gives Potter Lecture .. 654
Jaundice, cholic acid elimination in ab-680
Weil's disease from infected stream ab-674
Jews, refugees in England 656
Jones (Robert) Lecture 654
Kidney calculus (coral), operation for ab-679
effect of hypertension on ab-676
Legislation, medical, in U. S. Congress .. OS-647
state OS-636; OS-648
Library, medical indexes for 655
Licensure, review of foreign diplomas, Rumania 659
Life and climate 658
Lipodystrophy *627
Lung tissue, x-ray diffraction analysis of silica and quartz *610
McCollum, E. V., honored 653
McGinnes, G. F., goes to Tennessee 655
Malaria cured with sulfanilamide ab-670
resistance to: race and climate 658
therapeutic, in patient's home 659
tuberculosis in patients ab-679
Malpractice: corporations; liability for ... Ml-667
Marriages 659
Medical Examinations 664
Medical Service, A. M. A. study of E-630
for indigent, state laws on OS-637
plea for square deal in OS-640
Medicolegal Abstracts 667
Meetings, Coming Meetings 668
Menstruation, vicarious, from umbilicus 661
Metropolitan Life Insurance Company, new publications 655
Migraine, unusual 662
Mines, health and safety activities of federal bureau ab-641
Molecules, giant 658
Morison, Rutherford, death 656
Narcotics, state legislation OS-636
Natural Scientists, Society of, Germany 658
Negroes, resistance to malaria 658
plea for square deal in medical care ... OS-640
venereal disease clinic for, Tenn. 654
Neuritis, horse serum *590
peripheral, after appendicitis 663
New York Academy lectures on obstetrics .. 654
News 632
Nose hemorrhage (recurrent), radium for . ab-673
Obstetrics, American Congress on 655
intensive graduate training E-632
New York Academy lectures 654
Ohio State Post-Collegiate Assembly 654
Ophthalmology, graduate course in, Virginia . 655
Organization Section 633
Orr's HEALTH INSURANCE WITH MEDICAL CARE OS-633
Otolaryngology, graduate course in, Virginia . 655
Park, E. A., Harvey Lecture by 654
Pharmacy, Association for Advancement of .. 655
Physicians and health officials study together, Georgia E-632
Society of Natural Scientists and 658
supply, study of, New York 653
Pleura, bilateral collections of fluid ab-670
Pneumoconiosis, granite workers' nasal resistance in ab-673
hematogenous *602
roentgen classification and diagnosis ab-670
roentgen diffraction analysis *610
Pneumonia, bacteriologic examinations ab-680
serum, appropriation for, New Jersey 653
Poliomyelitis, virus, detection ab-672
Potter Memorial Lecture by General Ireland . 654
Pregnancy, extra-uterine, Cullen's sign *628
Prizes, Fischer awards 652
manufacturers award 653
Quartz in lung tissue, x-ray diffraction analysis *610
Queries and Minor Notes 661
Race, resistance to malaria and tuberculosis . 658
white, and the tropics 658
Radio Broadcasts 647
Rectum, employability of person with sinus .. 663
Respiration failure in newborn delivered by cesarean section 663
Rheumatic Fever, precipitinogen in serum . ab-673
Rheumatism and climate 658
Roentgen Rays, diffraction analysis of silica and quartz in lung tissue *610
Scarlet Fever outbreak, Illinois 652
Septicemia, subacute bacillus funduliformis . 657
Serum, horse serum neuritis *590
Silica, x-ray diffraction analysis in lung *610
Smith, W. A., Fischer award to 652
Snake venoms, spreading action ab-673
Societies, activities in industrial health ab-645
Society Proceedings 668
Speech, etiology of stammering ab-674
stammering and allergic diathesis ab-675
Sphincter Muscles, anal, operative injury to . *614
Spirochetosis, field fever ab-678
Sprue, clinical and hematologic review ab-674
State Board Examinations 664
Stomach cancer, medical aspect *618
Sulfanilamide treatment of malaria ab-670
Surgery, postoperative sickness ab-677
Southeastern Congress 655
Syphilis, graduate course, Chicago 653
Temperature and heart disease ab-669
Tetanus antitoxin, neuritis from *590
Thrombosis, coronary, and cold climate ... ab-669
Tongue involvement in angioneurotic edema . 662
Tonics and Sedatives ..... Adv. page 25
Trichloroethylene allergic dermatosis ab-677
Tuberculosis in malarial patients ab-679
pulmonary, hematogenous *602
race susceptibility to 659
uterus cervix tuberculosis with *605
Typhoid carrier incidence in Mississippi .. ab-669
Umbilicus discharge during menstruation 661
Undulant Fever at state college, Michigan .. 653
U. S. government interest in industrial health ab-641; ab-643; ab-644
Ureters cancer (primary) *596
Urinary Tract calculi formation, urea-splitting bacteria in ab-673
Urination, nocturnal enuresis ab-677
Uterus hemorrhage (functional), androgen treatment ab-672
tuberculosis, management *605
Vaughan, Henry F., honored 653
Venereal Disease clinic for Negroes, Tenn .. 654
Vertigo, aural, salt and fluid balance in ... ab-675
Vitamin A deficiency, ocular tests ab-676
for hydremia and chloridemia in infants. ab-677
in blood in infectious diseases in high mountains ab-677
of no benefit in hay fever treatment 662
WPA, medical indexes 655
Weather pains 638
Workmen's Compensation Acts OS-638
eyes; vision, loss of; corrective lenses in relation to Ml-668

THE JOURNAL of the American Medical Association is published weekly by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Subscription price, $8.00 a year. 25c a copy. Canadian $9.50. Foreign $12.00. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879.

BOOK BUYING SIMPLIFIED

We supply new and standard medical works of all publishers
ONE ORDER—ONE REMITTANCE
GET OUR LATEST BULLETIN
CHICAGO MEDICAL BOOK CO. 438 S. Honore St. CHICAGO

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 112, No. 7 — COPYRIGHT, 1939, BY AMERICAN MEDICAL ASSOCIATION — CHICAGO, ILLINOIS — FEBRUARY 18, 1939

THE PREVENTION OF DEAFNESS

S. J. CROWE, M.D.
AND
JOHN W. BAYLOR, M.D.
BALTIMORE

A laboratory was established at the Johns Hopkins University in 1924 for study of the causes and prevention of deafness. The plan of investigation was patterned after that used so successfully in general pathology, i. e. the correlation of impaired function as determined by clinical tests with the location and nature of the causal lesion. Systematic adherence to this plan for fourteen years has resulted in the accumulation of approximately 15,000 records of hearing tests, illustrating every type and degree of deafness, and has led us to conclusions that could not have been forecast. This communication deals with one phase of our investigation, which we believe is of the first importance in the recognition and prevention of the commonest type of deafness. A preliminary report on this subject was published in 1937.[1]

It was essential that the hearing test should be as accurate as possible and that each patient be followed and retested from time to time. Through the courtesy of the Bell Telephone Laboratories, we have used for these tests an audiometer with a range of tones from 32 to 16,384 double vibrations, which is not available in the commercial audiometers. As the number of records made with this audiometer increased, it became apparent that impaired hearing for high tones is extremely common in children as well as in adults. The classic teaching in otology has always been that "impaired hearing for high tones with good hearing for low tones" indicates an inner ear or nerve lesion, but the frequency with which we found this disorder in children led us to doubt the conclusion. Our doubts were increased after a clinical-pathologic study published in 1934 [2] and by the observation that some children regain their hearing of high tones after removal of enlarged tonsils and adenoids. The fact that the hearing did not always improve after operation led us to examine the upper air passages, nasopharynx and eustachian tubes of these children in search of a cause. It is necessary to use a nasopharyngoscope to obtain a clear view of this region. With some children a satisfactory examination may require a general anesthetic, such as avertin with amylene hydrate, but the results justify the means.

From the Otological Research Laboratory, the Johns Hopkins University School of Medicine.

1. Crowe, S. J., and Guild, S. R.: Impaired Hearing for High Tones, Acta oto-laryng. **26**:438, 1938.

2. Crowe, S. J.; Guild, S. R., and Polvogt, L. M.: Observations on the Pathology of High Tone Deafness, Bull. Johns Hopkins Hosp. **54**: 315 (May) 1934.

During childhood the lymphoid tissue in the throat reacts to infection by increasing in size and spreading to areas of mucous membrane normally free from it; for brevity we designate this condition an overgrowth of lymphoid tissue. It often happens that, after removal of the tonsils and adenoids in children and in some adults, numerous nodules of lymphoid tissue appear on the lateral and posterior walls of the pharynx. This condition is called granular pharyngitis. Our nasopharyngoscopic examinations of children with high tone impairment that failed to clear up after operation showed a condition in the nasopharynx identical with granular pharyngitis and, in addition, overgrowth of lymphoid tissue in and around the pharyngeal orifice of the eustachian tubes.

This abnormal growth of lymphoid tissue partially obstructs the tubes, causes a hypersecretion of mucus, which further impairs function, and produces a chronic irritation in the tubes and middle ears. The earliest symptom of such a partial obstruction is impaired hearing for the tones between 10,000 and 16,000 double vibrations. Good hearing in the middle of the scale, from 250 to 3,000 double vibrations, is essential for understanding speech, and until hearing for the middle tones becomes impaired children with partial tubal obstruction may have no evident difficulty in hearing at school or at home or if they do it is ascribed to inattention. If untreated the deafness progresses by involving one octave after another toward the low end of the scale and becomes evident only when the tones in the speech range are affected. Thus the primary cause may be insidiously damaging the hearing apparatus for several years before it is recognized. The location makes it impossible to remove this hyperplastic lymphoid tissue surgically without further damaging the tubes. The work of Heineke [3] at the University of Leipzig, which in 1905 showed that lymphoid tissue is more susceptible to irradiation than the adjacent epithelium, muscle and bone, suggested to us the use of radium and roentgen rays in the treatment of this condition. Safe doses of roentgen rays or radium do not destroy or totally remove lymphoid tissue but do reduce its size and temporarily inhibit its growth. With the aid and advice of Dr. Curtis F. Burnam, we began about ten years ago to treat hypertrophied lymphoid tissue around the eustachian tubes with roentgen rays through portals near the angle of the jaw and with radium in an applicator small enough to pass along the floor of the nose. With a nasopharyngoscope in one side of the nose and the applicator in the other, it is possible to place the applicator under visual control.

It was this combination of factors which led us to the conclusion that the most common type of middle ear

3. Heineke, H.: Experimentelle Untersuchungen über die Einwirkung der Röntgenstrahlen auf innere Organe, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **14**: 21, 1905.

deafness in adults begins in childhood between the ages of 5 and 10 years. The primary cause is hyperplastic lymphoid tissue around and in the pharyngeal end of the eustachian tubes. When the tubal orifices are partially blocked from this cause, operative removal of the tonsils and adenoids must be supplemented by one or more radiation treatments. Complete obstruction of the eustachian tube causes acute middle ear symptoms

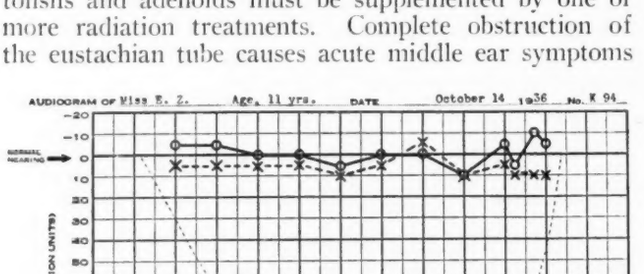

AUDIOGRAM OF Miss E. Z. Age, 11 yrs. DATE October 14 1936 No. K 94
HEARING LOSS (SENSATION UNITS)
O = Rt.
X = Lt.
TOTAL LOSS OF SERVICEABLE HEARING
PITCH

Chart 1.—The acuity of hearing for the frequencies 10,321, 13,004 and 16,384 double vibrations in an 11 year old child with normal hearing.

and often abscess. The most common result of a long-continued partial obstruction during childhood is an insidious, slowly progressing deafness that begins with the highest tones. Pain, tinnitus, dizziness or other symptoms of ear trouble were absent in the majority of our patients. Recurring attacks of otitis media, in children who have a tendency to lymphoid hyperplasia, is the second most frequent symptom of a chronic, partial obstruction of the eustachian tube. A third symptom is long-continued discharge from the ear after paracentesis or after a simple or radical mastoid operation. There are other causes of chronic discharge, but before one resorts to surgical operation the nasopharynx should be examined with a nasopharyngoscope and, if indicated, the function of the eustachian tube should be restored by suitable irradiation. We have found this supplementary treatment of great value. Occasionally it is necessary to pass a cotton-tipped Yankauer applicator through the eustachian tube, followed by gentle inflation, to remove plugs of thick mucus. The tube usually clears itself, however, after adequate irradiation, and unnecessary treatment causes irritation and a continued hypersecretion of mucus. Hyperplasia of lymphoid tissue in the upper air passages in response to every slight infection is most marked in children. After the age of puberty this type of reaction gradually disappears. If damage to the hearing apparatus and deafness later in life are to be prevented, one must do everything possible to improve the general condition and prevent recurring infections during childhood. This necessitates constant surveillance, particularly, frequent tests of hearing and repeated examinations of the tympanic membranes and nasopharynx.

When a condition around the orifice of the eustachian tubes is found that mechanically predisposes the child to ear infections or to deafness later in life, the first step is to take a careful history. Everything possible must be done to improve resistance and lessen the frequency of colds. For this reason the diet, clothing, digestion and number of hours of sleep should be inquired into. It is a mistake to put the child on an open porch or in a cold room at night; he should have an adequate amount of fresh air without undue exposure. A general physical examination including a tuberculin test is made. The adenoids, tonsils and hypertrophied lymphoid tissue on the lateral walls of the pharynx and at the base of the tongue are thoroughly removed by surgical operation. Later another examination is made, with the nasopharyngoscope, and if lymphoid nodules around the tubes are still present, the area is treated with radium. The applicator is made of flexible steel wire threaded for the attachment of a piece of brass tubing 1.5 cm. in length, which is closed at one end. The radium is placed in the brass tube, the wall of which is 1 mm. thick and allows the passage of gamma rays but filters out most of the beta rays. We have used from 2 to 2.5 gram minutes on each side of the nasopharynx. It is better to give repeated small doses at intervals of a month or six weeks than to risk the irritation and edema that follow an overdose. The radium-containing end of the applicator is held a few millimeters away from the surface of the lymphoid tissue being treated, the irritation or overtreatment of a localized area thus being avoided. It is never necessary or advisable to put the applicator directly into the lumen of the tube. If the hyperplastic lymphoid tissue in the pharynx is so diffuse that it cannot all be removed at operation or if it regenerates after every cold, we supplement the radium treatment with high voltage roentgen therapy. The total dose is 500 roentgens as calculated for the rays reaching the tissue being treated. This is given not at one exposure but in six treatments at intervals of four days. This may cause slight redness of the pharynx and discomfort on swallowing but causes no irritation of the skin.

We cannot emphasize too strongly that lymphoid nodules around the tubes may recur even after the most thorough operation and irradiation. The object of the operation is, by removing infected lymphoid tissue, to make the local condition in the nose and throat as favorable as possible for the normal function of the eustachian tubes, while the object of the irradiation is not to destroy or remove lymphoid tissue but to keep it in

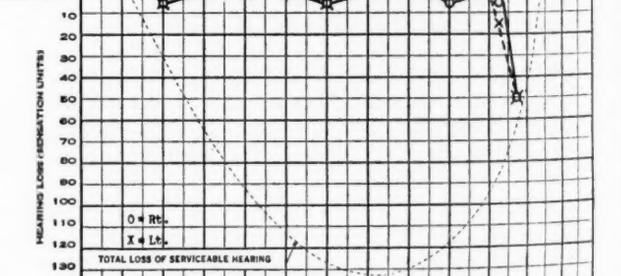

AUDIOGRAM OF D. P. K. Age, 9 yrs. DATE March 29 1937 No. K 428
HEARING LOSS (SENSATION UNITS)
O = Rt.
X = Lt.
TOTAL LOSS OF SERVICEABLE HEARING
PITCH

Chart 2.—The earliest stage of impaired hearing due to partial obstruction of the eustachian tubes with hyperplastic lymphoid tissue. Only the highest tones were affected. The frequency 16,384 double vibrations was not heard at the maximum intensity of the audiometer. More advanced stages of deafness from the same cause are shown in charts 3 and 7.

abeyance during the age period in which it grows most actively. By this method the hearing of children may be safeguarded and those already deaf from tubal obstruction may even be cured, as illustrated by the following case reports:

CASE 1.—E. F., a boy, brought to the Johns Hopkins Hospital in 1932, when 10 years of age, with marked impairment of hearing, during the first four years of life had had frequent colds that began with a sore throat and nasal congestion and usually terminated in a prolonged attack of bronchitis. In

several of these attacks his ears became infected and his tympanic membranes either ruptured spontaneously or were opened by paracentesis. For the relief of these symptoms his tonsils and adenoids were removed when he was 4 years old. After this operation the acute attacks were less frequent and he had no further earache or discharge, but he continued to have frequent colds and his hearing became progressively worse.

Physical examination showed nothing abnormal except in the ears and upper air passages. The tympanic membranes were intact but extremely retracted, scarred and opaque. The accessory nasal sinuses were not infected, but the adenoids had reappeared and were so large that they completely covered the orifices of both eustachian tubes. The lymphoid tissue on the lateral and posterior walls of the pharynx and at the base of the tongue was enlarged and infected. This hyperplastic lymphoid tissue was removed as thoroughly as possible with the idea of decreasing the area to be irradiated and thereby decreasing the dose of roentgen rays or radium necessary to restore the normal function of the eustachian tubes. For eight months after this operation the child had no colds, his hearing improved and the hyperplastic lymphoid tissue around his tubes regressed somewhat. The hyperplasia recurred, however, after the first cold, and his hearing gradually became worse. His hearing test at this time (March 1933) is shown in chart 3.

The nodules of lymphoid tissue, after two operations for their removal, were so diffusely scattered over the pharynx and nasopharynx that the patient was referred to Dr. Charles A. Waters in March 1933 for a series of roentgen treatments. It would probably have been wiser to do this in the first place. Over a period of a month he received 1,132 roentgens over the external auditory canal on each side, 468 roentgens over the tonsillar region on each side and 1,404 roentgens anteriorly over the base of the tongue and pharynx. For several weeks after these treatments his hearing was worse, owing no doubt to edema of the mucous membranes in the middle ear and eustachian tubes. After this it slowly improved. In November 1933 he had a second series of roentgen treatments and received 1,344 roentgens directed toward the nasopharynx on each side. His hearing rapidly improved and it remained good until March 1934, when hearing for the higher tones again became impaired in the left ear (chart 3). This was due to pneumonia with a mild secondary infection of the mucous membrane around the left eustachian tube. With no local treatment of any kind this condition cleared up and the hearing again improved, as shown in chart 3 (April 1934).

During the next twenty-one months the patient had no severe colds and no trouble in hearing. In February 1936, after a "slight head cold" with no sore throat, cough or fever, he again became quite deaf (chart 3). The lymphoid tissue in the nasopharynx was again hypertrophied and completely covered the orifice of the tubes. Radium was used and only the pharyngeal orifice of the tubes was treated. A 276 millicurie applicator, shielded with brass, was passed along the floor of the nose and under direct vision with a nasopharyngoscope in the opposite side; each eustachian orifice was irradiated for eight minutes, a dose equivalent to 2.2 gram minutes of radium.

After this treatment, in February 1936, the hearing improved, reaching normal by August 1936. The patient was next seen in October 1938, when in response to our request he returned for another examination. He was then 17 years of age, weighed 160 pounds (73 Kg.), rarely had a cold and had no noticeable impairment of hearing (chart 3). His tympanic membranes were scarred, opaque and retracted, especially Shrapnell's membrane, but his hearing was good and he had apparently passed the period of active lymphoid hyperplasia. It is worthy of note that at no time did he have a eustachian tube dilation or inflation. His only treatment was irradiation for the purpose of keeping the tubes open and clear of mucus.

CASE 2.—The first ear trouble of R. B., a boy, occurred in 1930 at the age of 3, following removal of his tonsils and adenoids. Both tympanic membranes ruptured and the discharge continued for several weeks. Three years later his tonsils and adenoids were again removed because of deafness, recurring colds, enlarged cervical glands, a continuous fever and extreme nervousness suggesting chorea. His hearing improved and for a year he was well, but after measles in December 1933 his hearing again became impaired, although there was no pain or discharge. He was brought to the Johns Hopkins Hospital in September 1934 because his hearing was growing progressively worse. He had a hearing loss of approximately 25 per cent, which was due to diffuse nodular hyperplasia of lymphoid tissue in the nasopharynx, on the lateral and posterior pharyngeal walls and at the base of the tongue. The tissue was removed with the patient under general anesthesia. This was the third time lymphoid tissue had been removed during four years. We now know that the results would have been better if, instead of this operation, the patient had been given a series of high voltage roentgen treatments. The orifices of both eustachian tubes were overgrown with

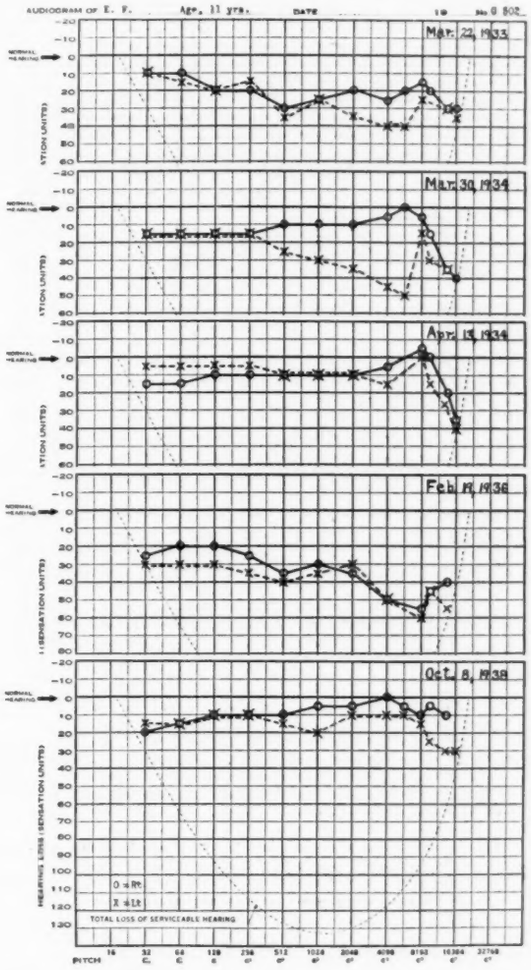


Chart 3 (case 1).—This series of audiograms shows clearly the effect on hearing of irradiation of hyperplastic lymphoid tissue in and around the orifices of the eustachian tubes. It also shows the necessity for frequent hearing and nasopharyngeal examinations as well as repeated radiation treatments. Note the similarity between the April 1934 audiogram and chart 2.

lymphoid tissue, but at this time we were uncertain about the effect of nasopharyngeal irradiation on the pituitary gland, and nothing more was done for a year and a half.

At a second examination, in April 1936, the general physical condition was found to be much improved and the lymphoid hyperplasia in the pharynx and at the base of the tongue had not recurred, but the local condition in the nasopharynx was unchanged. The tympanic membranes were retracted, tuning fork tests indicated a middle ear lesion with good bone conduction and the audiometer test showed impaired hearing in both ears (chart 4, April 1936). The patient was given his first radium treatment, a 2 gram minute application over each eustachian orifice. Six months later the pharyngeal orifices of the tubes appeared more normal than at any previous examination and his hearing was so much improved that for the first time in two years he heard tuning forks better by air than by bone conduction. The improvement was only temporary. After a cold the tubes again became partially blocked with lymphoid

tissue, and the test in July 1937 showed that his hearing was more impaired on the right side (chart 4). Three weeks after the second radium treatment, 2 gram minute application over each eustachian tube, acute otitis media developed in the right ear and his hearing in both ears became worse than before the irradiation. This was probably due to the irritating beta

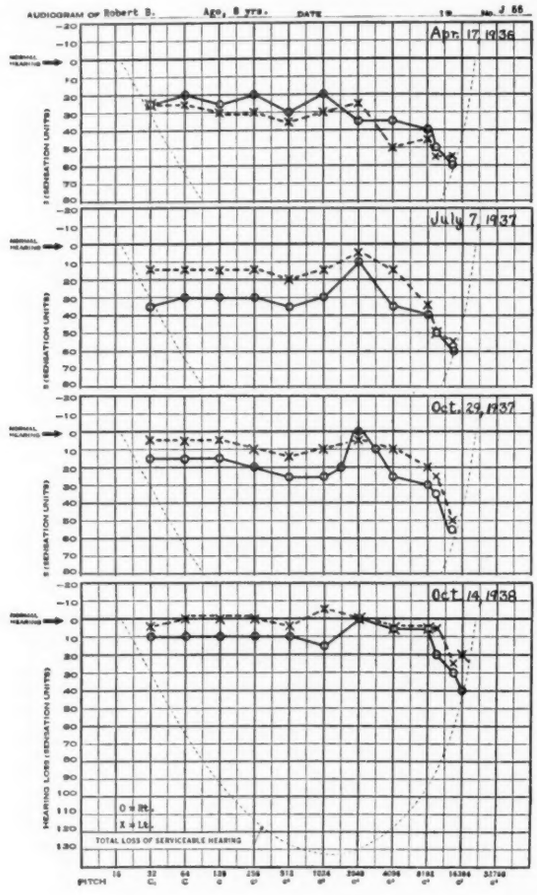

AUDIOGRAM OF Robert B. Age, 8 yrs. DATE 19 No. J 86
Apr. 17, 1936
July 7, 1937
Oct. 29, 1937
Oct. 14, 1938
HEARING LOSS (SENSATION UNITS)
O = Rt.
X = Lt.
TOTAL LOSS OF SERVICEABLE HEARING
PITCH

Chart 4 (case 2).—It was unusually difficult in this case to keep the eustachian tubes clear of lymphoid tissue. Frequent radiation treatments over a period of two years were necessary to restore the hearing. We shall continue to examine the child every six months and give further radium treatments if necessary.

rays. The applicator either was held too close to the orifice of the tubes or was improperly screened. Since then the patient's hearing has gradually improved (chart 4, October 1937-1938), although he has had no further treatment of any kind.

The patient is now 11 years of age, is in excellent physical condition and rarely has a cold, and his upper air passages, including the pharyngeal orifices of the eustachian tubes, are normal in every way. His hearing is so nearly normal on both sides that he has no difficulty in school work.

CASE 3.—E. O., a girl, probably began to have impairment of hearing in infancy, although it was not noticed until she was 8 years of age. She had otitis media at the age of 2, and at this time her tonsils and adenoids were thoroughly removed. The ears stopped discharging after this operation, but she continued to have difficulty in breathing through her nose. When first seen in the outpatient department of the Johns Hopkins Hospital, in April 1935, she was 7 years old but the true nature and implications of her trouble were not recognized. Her nasal mucous membranes were congested, her nose was filled with discharge, and nodules of hypertrophied and infected lymphoid tissue were seen on the lateral and posterior walls of her pharynx, but on palpation no enlarged adenoids were found. Both tympanic membranes were retracted but otherwise looked normal. It was thought that her trouble was due to a sinus infection. She was difficult to examine and treat and did not return until a year later. She came then because her teacher had noticed that she was partially deaf.

At the second examination her hearing was found to be markedly impaired (chart 5, April 1936). The low tones were heard better than the high tones. None of the tones above 2,896 double vibrations on the right or 5,793 double vibrations on the left were heard at the maximum intensity of the audiometer. The 512 double vibration fork was not heard by bone conduction. She was then examined under general anesthesia with a nasopharyngoscope. The adenoids in the midline of the nasopharynx were not enlarged, but the orifices of the eustachian tubes were completely covered with nodules of lymphoid tissue, similar to those in the pharynx.

The lymphoid nodules on the lateral and posterior walls of the pharynx were removed, and at a later date the region around the pharyngeal orifice of the tubes was treated with radium. The hearing improved, the nasal congestion and discharge disappeared and the audiometer test made about fourteen months later showed approximately normal hearing for both ears (chart 5, June 1937).

This case alone refutes the universally accepted idea that such an extreme degree of deafness, with the high tones more affected than the low tones and a total loss of hearing by bone conduction for the 512 double vibration fork, is always due to an inner ear or nerve lesion. The child had no treatment of any kind aside from the operation and the irradiation of the pharyngeal end of the tubes, but hearing for 4,096 double vibrations and

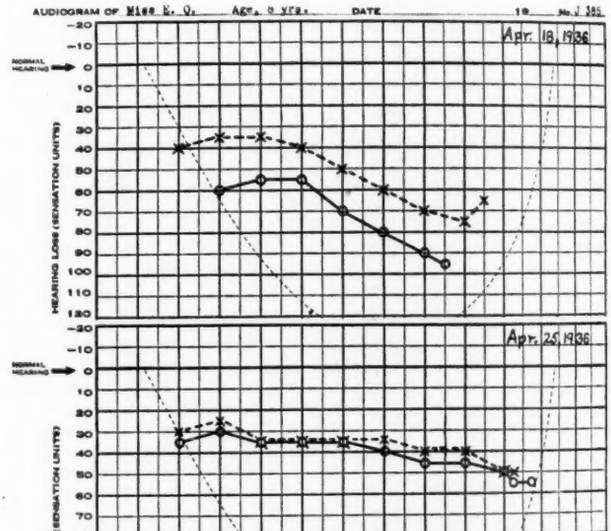

AUDIOGRAM OF Miss E. O. Age, 9 yrs. DATE 19 No. J 385
Apr. 18, 1936
Apr. 25, 1936
June 5, 1937
HEARING LOSS (SENSATION UNITS)
O = Rt.
X = Lt.
TOTAL LOSS OF SERVICEABLE HEARING
PITCH

Chart 5 (case 3).—The most striking improvement in hearing resulting from irradiation of eustachian tubes obstructed by lymphoid tissue. The hearing test of April 18, 1936, was typical of an inner ear or nerve deafness. The higher tones were not heard by air, and the 512 double vibration fork was not heard by bone conduction. In June 1937 the hearing was good for all high tones by air and normal by bone conduction.

all higher tones returned almost to the normal level. When the entire series of cases is considered, showing the hearing in all stages of impairment for high tones and for bone conduction and its return to the normal level, it is certain that the interpretation of hearing tests must be radically revised. An apparently hopeless deafness can be cured if it is recognized and treated early but

is incurable if allowed to progress until secondary changes in the middle ear embed the ossicles in scar tissue and adhesions.

CASE 4.—R. S., a boy aged 11 years, was brought to the outpatient department in October 1935 because of progressive impairment of hearing for three years. He had never had

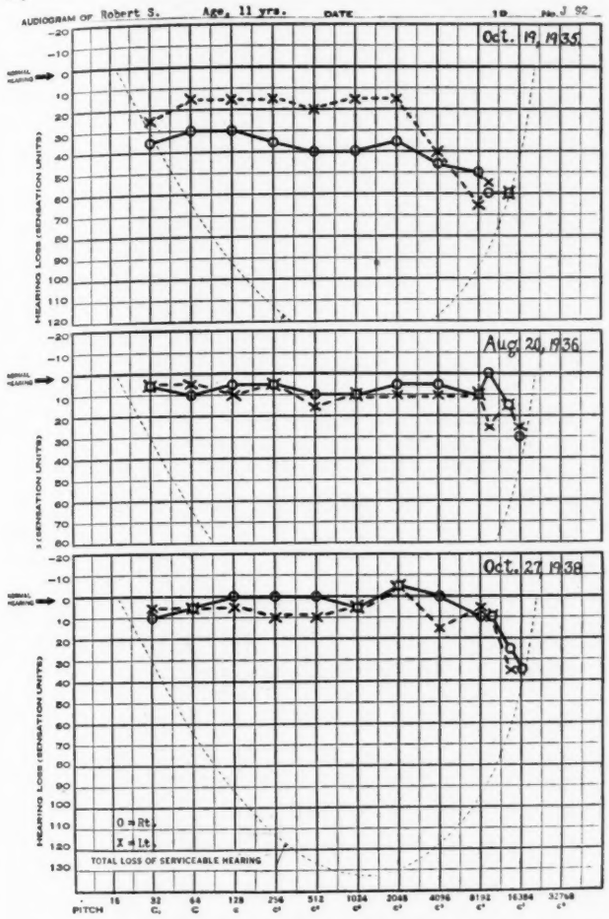

AUDIOGRAM OF Robert S. Age, 11 yrs. DATE 19 No. J 92
Oct. 19, 1935
Aug. 20, 1936
Oct. 27, 1938
HEARING LOSS (SENSATION UNITS)
O = Rt.
X = Lt.
TOTAL LOSS OF SERVICEABLE HEARING
PITCH

Chart 6 (case 4).—The impaired hearing in October 1935 was due to partial obstruction of the eustachian tubes with lymphoid tissue. The audiograms for the right and left ears differ markedly. The tubal obstruction and middle ear changes are more advanced on the right. The audiogram for the left ear, when compared with chart 2 and with the audiograms of March 30, 1934, in chart 3 and April 18, 1936, in chart 5, shows that deafness begins with the high tones and progresses by involving one octave after another toward the low end of the scale.

an ear infection but was a mouth breather and had had occasional attacks of tonsillitis. There was no history of deafness in the family. The general physical examination showed nothing abnormal except in the ears and upper air passages. The tonsils were enlarged and the orifices of both eustachian tubes completely covered by an overgrowth of lymphoid tissue. The tympanic membranes were much retracted but otherwise normal. No evidence of sinus infection was seen.

The first audiometer test, in October 1935, showed an impairment greater on the right for low tones but very severe on both sides for all high tones above 2,048 double vibrations (chart 6). It is noteworthy that the hearing was better by air than by bone, and bone conduction for the 512 double vibration fork was greatly shortened. Ten days later the tonsils and adenoids were removed. The patient was not seen again until April 1936, when his mother brought him back because his hearing had failed to improve. No audiometer test was made at this time, but on examination with the nasopharyngoscope it was seen that the eustachian orifices were still occluded with lymphoid tissue. He has had only one radium treatment (April 1936), with a nasal applicator screened with brass, for 1.5 gram minutes on each side. The second audiometer test, in August 1936, showed normal hearing in both ears (chart 6). The nasopharynx and tubal orifices were normal. When the patient was seen in October 1938 his hearing was good both subjectively and objectively (chart 6). It is noteworthy that as hearing improves the hearing for the highest tones is the last to reach the normal line. We have repeatedly observed that with children the highest tones are the first to be affected during the earliest stage of partial obstruction of the eustachian tubes by an overgrowth of lymphoid tissue.

The first diagnosis was a combined middle and inner ear deafness, but the absence of improvement in the six months following the removal of the tonsils and adenoids and the very striking improvement following irradiation shows that this diagnosis was incorrect. One radium treatment cleared away the lymphoid tissue around the tubal orifices. With the restoration of function of the tubes the hearing for conversation returned to normal, and it has remained so for more than two years. Hearing for some of the high tones has improved as much as 60 decibels. If a partial obstruction of the tubes is not corrected during childhood it is certain that later in life permanent deafness will result from irreparable changes in the middle ears.

This boy is now 14 years old and has good hearing in both ears, and now that he has passed the age of excessive lymphoid hyperplasia there is every reason to think that his hearing will remain good.

CASE 5.—J. H., a boy, had increasing deafness, which made it impossible for him to keep up with his class at school, and frequent colds and mouth breathing, and the school physician advised his parents to have his tonsils and adenoids removed. This was done, but very inadequately, in the spring of 1937. During the next year the symptoms all became worse. His hearing was so poor that the school authorities transferred him to a special class for handicapped children, where he was taught lip reading. We first saw him in June 1938 and found that his tonsils had been partially removed, that the pharyngeal orifices of both eustachian tubes were completely obscured with

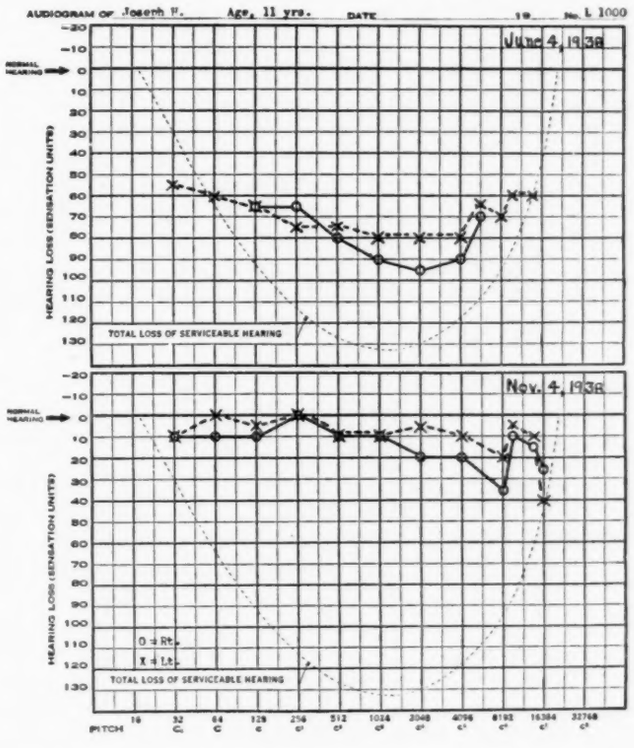

AUDIOGRAM OF Joseph H. Age, 11 yrs. DATE 19 No. L 1000
June 4, 1938
Nov. 4, 1938
HEARING LOSS (SENSATION UNITS)
O = Rt.
X = Lt.
TOTAL LOSS OF SERVICEABLE HEARING
PITCH

Chart 7 (case 5).—The spectacular improvement resulted from adenoidectomy followed by radium treatment of the remaining hyperplastic lymphoid tissue around the orifices of the eustachian tubes. A year before our first examination the patient had been transferred to a special school for deaf children and taught lip reading; now he is back with normal children and doing well in his studies.

nodules of lymphoid tissue and that the tympanic membranes were intact but markedly retracted. He was almost totally deaf (chart 7, June 1938). He failed to hear the high tones by air conduction at the maximum intensity of the audiometer or a 512 double vibration steel fork at maximum intensity by bone conduction. The observations were typical of severe inner ear deafness.

The remaining tonsil and adenoid tissue was removed, together with the hypertrophied lymphoid nodules on the posterior and lateral walls of the pharynx. Later the lymphoid tissue in and around the eustachian tubes was treated with radium. An applicator containing 147 millicuries was passed along the floor of the nose and held over the eustachian orifices for fifteen minutes on each side, a dose equivalent to 2.2 gram minutes of radium. The ears were not inflated at any time. Within a week the hearing began to improve, and when the second audiometer examination was made eighteen days after the first test his hearing was found to be practically normal on both sides for air and bone conduction. At our request the patient's mother brought him back for an examination in November 1938, just five months after the operation and irradiation. During this short period he had been transformed from a dull, listless, almost totally deaf child who had been in a lip-reading class for nearly a year to a bright, alert, healthy looking boy with good hearing in both ears (chart 7, November 1938). At the beginning of the school year, in September, he was put back into a class of children with normal hearing and is doing good work. At the first examination he did not hear the higher tones even at the maximum intensity of the audiometer or the monochord and heard nothing by bone conduction. The improvement shown by the second examination has been maintained and extended, particularly for bone-conducted sounds. We can offer no explanation of the latter phenomenon. The only objective finding to explain it is the disappearance of the lymphoid tissue in and around the pharyngeal orifice of the eustachian tubes. The only adults in whom we have seen a comparable improvement in hearing for air and bone conduction had Ménière's disease.[4] In these patients the eustachian tubes and middle ears were normal and the improvement was spontaneous and not the result of any form of treatment.

This case emphasizes the necessity for a revision of diagnostic methods for differentiating middle and inner ear lesions and proves that in children an apparently hopeless deafness may be cured.

SUMMARY

A long-continued partial obstruction of the eustachian tubes in children causes retraction of the tympanic membranes, impaired hearing for high tones with relatively good hearing for low tones, and sometimes a total loss of hearing by bone conduction. This revolutionary statement is based on detailed observation of sixty children, in some cases for ten years. In all of them the pharyngeal orifices of the eustachian tubes were partially occluded with nodules of lymphoid tissue. This condition in the nasopharynx is identical with granular pharyngitis but is more difficult to see. The location of the hyperplastic lymphoid tissue interferes with the normal function of the tubes. The most satisfactory method of treatment is irradiation with radium or roentgen rays. After the hyperplastic lymphoid tissue has been reduced and the tubal orifices look normal when viewed with the nasopharyngoscope, the hearing for high tones and for bone-conducted sounds often returns to the normal level, and it remains there so long as the eustachian tubes are clear. After a cold the original condition may recur, with consequent loss of hearing. This proves that impairment or even total loss of hearing for high tones and for bone conducted sounds does not necessarily imply an inner ear or nerve lesion.

Complete obstruction of the eustachian tube causes acute middle ear symptoms and often abscess. Partial obstruction in children causes a progressive loss of hearing, beginning with the high tones and gradually involving the low tones. If the causal condition is recognized and properly treated before the age of 15, hearing usually returns to somewhere near the normal level. After this age the results are far less satisfactory, because hyperplastic lymphoid tissue and partial tubal obstruction usually date from early childhood. After the age of 15 the secondary changes in the middle ear may be so advanced that they can be repaired by no treatment whatever.

Irradiation does not permanently remove hyperplastic lymphoid tissue, but relatively small doses, which in no way injure the pituitary gland, nasopharyngeal mucosa or inner ear, keep it in abeyance during the age period in which it grows most actively.

We conclude from our studies that the most common type of middle ear deafness in adults begins during childhood. It often progresses so gradually and insidiously that it may not become evident, i. e., the frequency range of speech is not involved, until it is too late to correct the primary trouble and restore the hearing. We feel that if school children in the primary grades were examined with a nasopharyngoscope at least once a year and those with hyperplastic lymphoid tissue in and around the orifice of the eustachian tubes were treated with radiation as often as necessary to insure normal functioning of tubes, the number of deaf adults in the next generation could be reduced by 50 per cent.

4. Crowe, S. J.: Ménière's Disease, Medicine **17**: 1 (Feb.) 1938.

HORSE SERUM NEURITIS

WITH REPORT OF FIVE CASES

A. E. BENNETT, M.D.

OMAHA

While the potential dangers of immediate and delayed reactions following parenteral administration of horse serum are well recognized by the medical profession, the possibility that serum sickness may result in serious complications is not as well known. One of the most serious sequels following prophylactic and therapeutic injection is horse serum neuritis.

Serum sickness, a delayed type of reaction, occurs from six to fourteen days after the injection of horse serum. It is in no way dependent on atopic, hereditary sensitiveness or anaphylaxis (artificial sensitization by previous injections that at times causes immediate, life-endangering reactions). Serum sickness probably would occur in all cases if enough serum were given. Local itching, swelling, generalized urticaria, fever, enlargement of lymph glands, polyarthritis, general malaise, leukopenia, albuminuria, fall of blood pressure and decreased coagulability of the blood make up the complete clinical picture.

The severity of the reaction varies greatly. The cause is in no way understood. Size of the dose, age and degree of purification and concentration, type of bacteria, peculiarities of serum from certain horses and route of administration are factors, but the exact cause of the sickness is not known.

In a small minority of cases, neurologic complications occur at the onset or height of serum disease. While cerebral, meningeal and spinal lesions occur, the commonest involvement is in peripheral nerves. Also in a large percentage of cases the nerves from the cephalic part of the brachial plexus (fifth and sixth cervical roots) are involved.

From the Department of Neurology, University of Nebraska College of Medicine.

Read before the Section on Nervous and Mental Diseases at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

SYMPTOMS OF SERUM NEURITIS

Within a few hours after the onset of serum sickness and generalized urticaria, severe neuritic pains develop. The pains usually involve the neck, shoulders, arms and legs and are so severe that analgesic and opiate medication gives little relief. Flaccid paralysis occurs within a few hours to a day or two and it is followed by gradual atrophy of muscles. Muscle tenderness, hyperesthesia and dull pains persist for several weeks. The neurologic signs, depending on the neural segments involved, consist of motor paralysis, atrophy, at times fibrillations, sensory loss and reduced or absent reflexes.

PATHOGENESIS OF SERUM NEURITIS

Just as the exact cause of serum disease is not known, the exact cause of the occurrence and localization of serum neuritis is not known. Early authors, for example Richardson,[1] offered the explanation of a direct toxic action of serum on nerves. Others, for example Bourgignon [2] and Pessin,[3] have favored the theory that protein toxins affect muscles innervated by nerves of low or medium chronaxia. Most writers—Kennedy,[4] Young,[5] Allen,[6] Kraus and Chaney,[7] Wilson and Hadden [8]—offer the more plausible theory of perineural urticaria and edema producing a compressive or ischemic paralysis of nerve trunks or peripheral nerves.

The common site of involvement of the upper brachial nerves (fifth and sixth cervical nerves) producing the characteristic Erb-Duchenne scapulohumeral palsy is not explained. The largest percentage of reported cases are of involvement of the suprascapular nerve combined at times with involvement of the axillary nerve or long thoracic nerve, all from the fifth, sixth and seventh cervical nerves. To explain this localization there must be some localized anatomic condition similar to the compressive neuritis of Bell's facial palsy or the compression of the scalenus anticus muscle associated with cervical rib neuritis. Associated with serum sickness are intense vasodilatation and edema of skin, muscles, bursae and joint tissues. Perineural urticarial compression of these nerve trunks for a few hours could produce the palsy.

It seems possible that this edematous process may occur in the intervertebral foramens, bony grooves or perineural sheaths of the roots or nerves, interfering with the blood supply and causing impairment of nutrition or anoxemia with temporary nerve cell and fiber death. The experiments of Garcin and Bertrand [9] and Dechaume and Croizat [10] with animals showed, after repeated anaphylactic shock, phenomena of vasodilatation, perivascular infiltration and at times minute hemorrhages with cellular destruction and marked meningeal reactions. Increased lymphocytosis has been observed frequently in the spinal fluid during the serum sickness stage. Possibly then a combination of a vascular disorder and edematous compression accounts for the neuropathologic picture of complete peripheral nerve palsy and muscular atrophy. The anterior horn motor neurons must be unaffected, because complete regeneration usually occurs.

Another etiologic factor is age. Almost all reported cases have been in adults, the average age being 26. Men are more frequently affected than women. In over half the reported cases the complication has followed the prophylactic use of tetanus antitoxin, but practically all types of horse serum antitoxin have produced it.

REVIEW OF LITERATURE

Most of the reported cases are from France, about seventy to 1938. Twenty-nine authentic cases have been found in the English literature; ten have been reported from Germany and a few isolated ones from Denmark,[11] Italy, Poland, Rumania, Japan and Switzerland. Approximately 115 cases have been reported. It is difficult to be exact, because many complications from vaccine therapy and other allergic manifestations with neurologic complications are included in some reports. These are not true post-serum sickness neuritis.

The first accurate case reports were made by Gardere and Gangolphe [12] in 1908, Thaon [13] in 1912 and Vincent and Richet [14] in 1911 in France. The first American case was reported by Richardson [1] in 1917; Dyke [15] of England in 1918 described a typical case, in which the neuritis followed the prophylactic injection of tetanus antitoxin for war injuries. Lhermitte,[16] reporting in 1919, stimulated renewed interest in France. The many succeeding authentic case reports have been summarized best by Kennedy [4] in the United States, Allen [6] in England in 1931, Young [5] in the United States in 1932, Doyle [17] in the United States in 1933, Vogel [18] in Germany in 1935, Roger and Poursines [19] in 1932, Mignot [20] in 1936, Kraus and Chaney [7] in 1937, Schipkowensky [21] in 1937 and Chavany and Askenazy [22] in 1936.

TREATMENT

Prophylaxis of Serum Disease.—There is no known method of desensitization to prevent serum sickness nor any way of detecting susceptible persons, as with atopic or anaphylactic types. The only sure prophylaxis would be the substitution of other animal serums

1. Richardson, W. W.: Tetanus, with Secondary Multiple Neuritis, J. A. M. A. **68:** 1611-1612 (June 2) 1917.
2. Bourgignon, G., cited by Pessin.[3]
3. Pessin, David: Les paralysis postsérothérapiques, Paris, Jouve & Cie, 1933.
4. Kennedy, Foster: Certain Nervous Complications Following Use of Therapeutic and Prophylactic Sera, Am. J. M. Sc. **177:** 555-559 (April) 1929.
5. Young, Forrest: Peripheral Nerve Paralysis Following the Use of Various Serums, J. A. M. A. **98:** 1139-1143 (April 2) 1932.
6. Allen, I. M.: The Neurological Complications of Serum Treatment, Lancet **221:** 1128-1131 (Nov. 21) 1931.
7. Kraus, W. M., and Chaney, L. B.: Serum Disease of the Nervous System, Arch. Neurol. & Psychiat. **37:** 1035-1047 (May) 1937.
8. Wilson, George, and Hadden, S. B.: Neuritis and Multiple Neuritis Following Serum Therapy, J. A. M. A. **98:** 123-125 (Jan. 9) 1932.
9. Garcin, Raymond, and Bertrand, Ivan: Etude expérimentale des lesions du névraxe consécutives aux choc anaphylactiques répétés et aux injections réitératives espachées d'albumine étrangère, Bull. et mém. Soc. méd. d. hôp. de Paris **51:** 787-796 (May 13) 1935; cited by Kraus and Chaney.[7]
10. Dechaume, J., and Croizat, P.: Système nerveux et anaphylaxie: faits expérimentaux; documents anatomo-cliniques, Paris méd. **2:** 262-272 (Oct. 1) 1932; cited by Kraus and Chaney.[7]
11. Wulff, F.: Lidelse of Nervesystemet after seruminjektion, Hospitalstid. **76:** 1237-1248 (Dec. 28) 1933.
12. Gangolphe: Névrite au cours d'un cas de tétanos traité par le sérotherapie, Lyon méd. **110:** 497-499, 1908; cited by Kraus and Chaney.[7]
13. Thaon, P.: Neuritis Following Prophylactic Injection of Tetanus Antitoxin, Rev. de méd. **32:** 749 (Sept.) 1912; cited by Wilson and Hadden.[8]
14. Vincent, C., and Richet, C.: Forme atypique de la maladie de sérum accidents tardies et graves, Bull. et mém. Soc. méd. d. hôp. de Paris **32:** 670, 1911; cited by Doyle.[17]
15. Dyke, S. C.: Peripheral Nerve Lesions After Antitetanic Serum, Lancet **1:** 570 (April 20) 1918.
16. Lhermitte, J.: Paralyses After Serum Treatment, Paris méd. **1:** 221 (March 8) 1924; cited by Young.[5]
17. Doyle, J. B.: Neurologic Complications of Serum Sickness, Am. J. M. Sc. **185:** 484-492 (April) 1933.
18. Vogel, P.: Ueber Polyneuritis nach Seruminjektion, Nervenarzt **8:** 11-17, 1935.
19. Roger, Henri, and Poursines, Yvires: Les formes polynévritiques des paralysies sérothérapiques, Arch. de méd. gén. et coloniale **1:** 65-78, 1932; cited by Krause and Chaney.[7]
20. Mignot, René: Paralysie due plexus brachial après sérothérapie antidiphthérique, Presse méd. **44:** 883-884 (May 30) 1936.
21. Schipkowensky, Nikola: Schädigungen des Nervensystems, bei Serumkrankheit, Arch. f. Psychiat. **106:** 779-792, 1937.
22. Chavany, J. A., and Askenazy, H.: Réflexions à propos d'un cas de paralysie post-sérothérapique, Gaz. méd. de France **43:** 361-370 (April 15) 1936.

for horse serum.[23] The development of tetanus immunization by alum-precipitated toxoid would eliminate the larger percentage of complications.[24]

Prophylaxis of Post-Serum Sickness Neuritis.—It appears to me to be much more feasible to prevent the serious complication of neuritis or at least the extreme atrophic types by early recognition. The development of neuritis can be detected early by the characteristic neuritic pains following generalized urticaria. Shoulder, joint or muscle pains sufficiently severe to require opiates are suggestive of radicular involvement. Measures directed toward reducing vasodilatation and urticarial swelling should reduce the perineural edema and lessen residual neural damage. Intravenous injections of hypertonic sucrose or dextrose solution and artificial hyperpyrexia (103 to 104 F. for two hours) or blanket sweat packs with pilocarpine would dehydrate muscle, joint and neural structures, relieve pain and tend to restore normal nerve function.[25] Repeated injections of epinephrine, which are so effectual in relieving urticarial swelling, probably lessen nerve damage.

Treatment of Neuritis.—After the serum sickness stage the treatment is largely symptomatic. An abduction splint and complete rest of the arm are indicated during the acute stage. General nutritive and vitamin therapy may be of value. Local and general heat therapy relieves neuritic pain, muscular tenderness and hyperesthesia, which may persist for some weeks. After the hyperesthetic stage, physical therapy, such as massage and electrical stimulation similar to the treatment for poliomyelitis, are indicated.

PROGNOSIS

Patients having profound atrophy within six weeks after serum disease are slowest to recover. However, even those with advanced atrophy and absence of electrical reactions tend to recover. About 20 per cent are left with residual weakness and atrophy, especially of the deltoid muscles. The large majority recover in about six months. Recovery occurs as late as eighteen months after injury.

MEDICOLEGAL ASPECTS

The medicolegal aspects are of extreme economic importance, as in a large percentage of cases the neuritis develops after industrial wounds and prophylactic administration of tetanus antitoxin. It is directly the result of the treatment administered for the accidental wound and is compensable. Insurance companies have to accept this fact and recognize the risk, since physicians must give prophylactic injections of tetanus antitoxin. However, greater care can be exercised by the physician in giving prophylactic serum only for dirty or penetrating wounds. Patients who have previously had neuritis are particularly susceptible to reactivation with serum sickness.[18] An explanation of the symptoms of serum sickness should be given to the patient with instructions to call the physician if severe neuritic pains develop in order that he may administer early curative treatment.

In an attempt to obtain facts concerning the compensation experience of leading insurance companies, a questionnaire was sent to eighteen companies or commissions. Replies were received from eleven companies. Six said that they had had no experience relative to complications following serum sickness. Two replied that they had had claims for this type of disability, but no facts were given. One stated they had had one serious claim, but the facts were unobtainable. The Travelers Insurance Company, through Dr. James C. Graves, supplied data concerning two typical cases of palsy of the upper brachial nerves following tetanus prophylaxis. One patient recovered in five months, with compensation of over $500. The other had not recovered since July 1937; he was still being carried on the basis of a 50 per cent disability of the arm, and the total amount of the claim was not stated. Another company reported a case in which brachial neuritis on the right side, with aphasia, occurred at the height of serum sickness following prophylactic injection of tetanus antitoxin; the disability lasted six months, with an approximate compensation cost of $2,000.

Finally, physicians should avoid indiscriminate injections of horse serum antitoxins which are nonspecific in their action or of which the therapeutic value is questionable, for example antistreptococcus, antistaphylococcus or antigonococcus serums. Other therapy less dangerous had better be substituted.

Only by a more general knowledge of the facts regarding neurologic complications of horse serum inoculation can the physician remove these unfortunate sequelae.

REPORT OF CASES

CASE 1.—J. M., a youth aged 16, July 4, 1933, received a burn of the left hand from a firecracker. The family physician treated it and injected 1,500 units of tetanus antitoxin into the left deltoid region. Seven days later generalized urticaria, malaise, fever and joint pains developed. Very severe pains, persisting for about six weeks, occurred in the right elbow, shoulder and arm. Two days after the onset the patient was unable to lift the right arm. He was referred for neurologic examination about August 4. At that time he complained of loss of weight and numbness of the right shoulder region. He had received an injection of diphtheria toxin antitoxin at the age of 13. There was no history of an allergic tendency.

Examination disclosed marked atrophy with complete loss of motor power of the deltoid, supraspinatus and infraspinatus muscles of the right shoulder, There was also moderate weakness of the right biceps. Loss of pain and touch sensation was present over the deltoid area. The biceps reflex was diminished. Extreme muscular tenderness was present over the atrophic muscles and brachial plexus. No response was elicited by faradic stimulation of the atrophied muscles.

Local diathermy treatments to the right arm and shoulder were given, together with analgesic medication. The patient's arm was kept at complete rest. After about three months the motor power gradually returned and the muscle atrophy disappeared, and by the end of about six months the muscles appeared normal. A complete neurologic examination four years later, Dec. 29, 1937, revealed no evidence of residual weakness, atrophy or reflex disturbance. Recovery from a severe grade of serum neuritis of the upper part of the brachial plexus was complete.

Case 2.—W. J., a man aged 56, Sept. 27, 1935, received a severe laceration and compound fracture of the right ankle and leg from a mowing machine. Fifteen hundred units of tetanus antitoxin was injected into the arm muscles. Because of the severity of the injuries, the patient was referred to a surgeon in a city hospital. Cultures of material from the wounds revealed Bacillus welchii, and 60 cc. of gas bacillus antitoxin was given. The patient was critically ill for two

23. Fantus, Bernard, and Feinberg, S. M.: The Therapy of Horse Serum Reactions, J. A. M. A. **107**: 1717-1719 (Nov. 21) 1936. Paschlau, Günther: Was kann von Privatarztlicher und staatlicher Seite zur Verhütung unerwunschter Serumreaktionen getan werden, Deutsche med. Wchnschr. **63**: 1016-1018 (June 25), 1050-1051 (July 2) 1937.

24. Gold, Herman: Active Immunization of Normal Persons with Tetanus Toxoid, Alum Precipitated, Refined, J. A. M. A. **109**: 481-484 (Aug. 14) 1937.

25. Bennett, A. E., and Cash, Paul T.: Relief of Neuritic Pain by Artificial Fever Therapy, Arch. Phys. Therap. **19**: 69-74 (Feb.) 1938.

weeks, with a temperature as high as 106 F. About October 15 a serum reaction, generalized joint pains and urticaria, with a temperature of 100.5 F., developed. At the same time severe pains through the right shoulder, arm and hand, with numbness along the ulnar distribution, and tremor of the hand occurred. Muscular wasting of the shoulder muscles and small muscles of the right hand gradually developed.

Physical examination, with otherwise essentially negative results, revealed focal infection of the teeth and tonsils, generalized undernutrition and an open, draining wound in the right leg. Neurologic examination showed nothing abnormal except in the right upper extremity.

Fig. 1.—Marked atrophy of the right supraspinatus, infraspinatus and deltoid muscles.

Motor power was markedly reduced in all the shoulder muscles, especially the supraspinatus, infraspinatus and deltoid. Motor weakness was also present in the biceps and the muscles of the forearm, with one-half inch to an inch of atrophy. The hand grip was reduced, and abduction and adduction of the fingers were lost. Marked atrophy of the shoulder girdle and intrinsic hand muscles was present. Hyperesthesia in the shoulder and arm muscles was present; otherwise the sensory examination gave negative results. The biceps and triceps reflexes on the right were still present but were markedly diminished.

The patient recovered from the fracture and wound of the ankle. Gradually the neuritic pains subsided; after about three months, motor power gradually returned and the muscular atrophy disappeared. Reexamination six months later revealed almost complete functional recovery from the fairly complete serum neuritis of the brachial plexus.

CASE 3.—R. G., a man aged 26, March 2, 1937, punctured the left hand with pruning shears. Fifteen hundred units of tetanus antitoxin was injected into the left upper arm muscles. The wound healed without infection. Eight days later severe pains developed in the right shoulder region. The patient was confined in bed for two days and complained of generalized aching throughout the body, especially the joints, and had a slight cutaneous eruption. The severe shoulder pains continued, the patient gradually losing the ability to raise the right arm from the side. In about six weeks he noted wasting of the shoulder muscles. As the pains lessened he attempted to work but was unable to use the right arm. He had also noted an area of numbness over the right upper arm. About 15 pounds (7 Kg.) loss of weight occurred, and at times the left shoulder muscles were painful. The patient received no special treatment for five months, and a diagnosis was not made.

The past history was unimportant. No atopic tendency was present, and the patient had never received an injection of serum.

Physical examination August 13 gave essentially negative results. Neurologic examination, except for the upper extremities, revealed nothing abnormal. On inspection gross atrophy of the right side of the shoulder girdle was apparent (fig. 1). The deltoid, supraspinatus, infraspinatus and teres muscles were almost completely absent. The patient was totally unable to elevate the right arm; backward extension was very weak. The remainder of the arm muscles were in normal tone. The sensory examination revealed nothing abnormal except extreme tenderness of muscles and nerve trunks. A few fibrillary twitchings and myodemia were seen. The reflexes were all present. The left shoulder muscles were painful to pressure, and muscular irritability was present on percussion; otherwise the left upper extremity was normal. Faradic stimulation elicited no muscular contraction from the atrophic muscles.

The patient was hospitalized August 16, and six artificial fever treatments, three hours at a temperature of 103 to 104 F., were given at three day intervals. Prompt and complete relief of pain occurred. A high vitamin diet, with additions of vitamin B_1 and injections of liver extract, was given. After the soreness of the muscles disappeared, light massage was given to the atrophic muscles, but otherwise immobilization of the shoulder was carried out. Examinations were carried out every thirty days. The right triceps reflex was gradually reduced until it was absent. The atrophy of the deltoid muscles progressed. The patient gained 10 pounds (4.5 Kg.) in weight. Faradic responses were not elicited in the atrophic muscles. Jan. 1, 1938, compensation on the basis of 50 per cent permanent loss of function in the right arm was paid the patient. Observation one year after the serum sickness revealed no improvement in the condition.

This patient's neuritic involvement was more severe than that of the other four patients, and he was the only one who failed to obtain a functional recovery. One can only speculate as to whether earlier treatment might have lessened the total disability. The fact that he received compensation for one year and a settlement on the basis of 50 per cent permanent disability of the arm illustrates the economic problem of insurance compensation in industrial cases.

CASE 4.—G. C., a man aged 29, Aug. 4, 1937, received a nail puncture wound of the foot. Fifteen hundred units of tetanus antitoxin was injected into the left upper arm muscles. One week later mild generalized urticaria occurred, with generalized aching. A few hours later very severe pains began in both shoulders. A physician was called in the night, but in spite of several hypodermic injections of narcotics and strong sedatives he was unable to obtain relief of pain. Within twelve hours after the onset of pain, the patient was unable to lift the left arm. The pains gradually lessened in severity but were replaced by a burning sensation throughout the left shoulder muscles. An area of numbness appeared over the left deltoid muscle. Gradually the patient noticed wasting of the left shoulder muscles. A 5 pound (2 Kg.) loss of weight occurred. Otherwise the general health remained good. The patient had always had excellent health; the only previous administration of serum had been for immunization against diphtheria.

Fig. 2.—Moderate atrophy of the left supraspinatus, infraspinatus and deltoid muscles.

Physical examination August 26 gave essentially negative results throughout. Neurologic examination revealed nothing abnormal except in the left upper extremity. On inspection the left shoulder was seen to be grossly atrophic; the left supraspinatus, infraspinatus and deltoid muscles were three-fourths inch smaller than and the left biceps one-half inch smaller than the right (fig. 2). The patient was totally unable

to elevate the arm or raise the hand to the head. Marked weakness of external rotation and of forward flexion likewise were present. Both biceps and triceps reflexes were present. Marked muscular irritability was present, and the patient was very tender over the shoulder muscles and in the region of the brachial plexus. An area of total anesthesia and analgesia was present corresponding to the left circumflex nerve distribution over the deltoid. The atrophic muscles did not contract on faradic stimulation.

The patient was hospitalized for active treatment. Six artificial fever treatments of three hours, at a temperature of 103 to 104 F., were given at intervals of three days, together with vitamin therapy. The neuritic pains, tenderness and anesthesia were entirely gone in three weeks. The patient gained 10 pounds (4.5 Kg.) in weight. The muscular atrophy progressed slightly. Active daily massage was carried on. Four months after the serum sickness the patient showed the first signs of regaining motor power. A definite response to electrical stimulation occurred and he was able to contract the deltoid muscle sufficiently to hold the arm horizontally for a moment. One month later he was able to carry out all movements of the shoulder but the muscles fatigued readily. The atrophy was disappearing. Two months later, about seven months after the injury, slight residual atrophy remained, with weakness of abduction, extension and flexion of the upper arm. The patient resumed light manual labor.

The early treatment instituted relieved the acute neuritic manifestations, especially the pain, and probably prevented progression to the extreme atrophic stage of case 3. This may have been an important factor in the recovery. The patient received compensation for seven months, which illustrates the importance of the problem these complications present for insurance companies.[26]

CASE 5.—A. L. A., a man aged 26, had always had robust health. At the age of 15 he received antitoxin for diphtheria immunization. Aside from occasional attacks of hives from bee stings and ingestion of fruit, he had no history of allergy.

At the age of 19, Aug. 5, 1931, he received a puncture wound of the foot. Fifteen hundred units of tetanus antitoxin was injected in the left upper arm. Seven days later severe urticaria developed, requiring three hypodermics of epinephrine in five hours for relief. Twelve hours after the onset of urticaria, severe pains developed in all four extremities, especially severe in both shoulders and the left arm. After twenty-four hours, as the severe pains were subsiding, the patient noted complete inability to extend the fingers and thumb of the left hand. He was also unable to extend the left elbow because of pain and swelling of the joint. The condition lasted one week. The loss of extension of the fingers continued, but extension, pronation and supination of the wrist remained. Numbness over the dorsum of the hand was also present. The only way the fingers could be extended was by complete flexing of the wrist. No muscular atrophy appeared.

The patient received electrical massage for several months. Seven months after the onset of paralysis the extensor power of the fingers returned.

This patient suffered partial radial neuritis after serum sickness and made a complete recovery in seven months.

SUMMARY

Horse serum neuritis, a severe sequel of serum sickness, develops at the height of the serum disease, usually one week after the injection of serum. Any type of horse serum can produce it, but in the majority of cases it follows injection of tetanus antitoxin. The neuritic type of pain is classic, and an early diagnosis of the complication can be made.

The cause of serum sickness and its neuritic complications is unknown. Perineural edema producing compressive neuritis seems the logical cause. In a large majority of cases a peculiar anatomic localization occurs, involving the cephalic part of the brachial plexus (fifth and sixth cervical nerves). About 115 authentic cases have been recorded in the world literature during the past thirty years.

The ideal treatment would be prophylaxis of serum sickness by substitution of other serums for horse serum.[23] Early diagnosis of the neuritic complication with adequate treatment should prevent the severely atrophic types of paralysis. Vigorous dehydrating measures are recommended during the acute stages.[25]

The prognosis for recovery within six months is usually good, but about 20 per cent of patients are left with residual weakness and atrophy. Medicolegal responsibility in industrial or compensation cases must be recognized.[27] Greater care in the administration of serum when tetanus is suspected and avoidance of the use of antitoxins not of proved specific value will cut down the incidence of these unfortunate complications of biologic therapeutics.

CONCLUSION

Complete recovery occurred in three cases and incomplete recovery in two cases of neuritis following horse serum sickness. This distinct clinical entity should be more widely recognized by the medical profession. The present knowledge of the pathogenesis and treatment offers possibilities of prevention.

1204 Medical Arts Building.

26. Examination fifteen months after injury showed residual weakness of the deltoid. The compensation claim was still unsettled.

27. Wulff.[11] Vogel.[18] Chavany and Askenazy.[22]

ABSTRACT OF DISCUSSION

DR. WALTER FREEMAN, Washington, D. C.: Dr. Bennett has had an exceptional experience in finding five cases in the past six years. The condition occurs relatively often in industrial communities and will continue until the underlying physiology of the serum illness is determined. The theory that the nerves suffer from compression by the swollen tissues is probably the most acceptable one. Here is a difference from certain other kinds of neuritis, for instance the diphtherial neuritis, which is often a local condition but which is much more closely related to the site of the injection or the site of the local infection than is the horse serum neuritis. I think Dr. Bennett might emphasize that although these involvements were always in the arm they were by no means always in the arm that was inoculated, whereas in cases of localized wound diphtheria it is the local nerve that seems always to be affected. It is the same way with tetanus itself. Just what the cause of the reaction to this serum is has not been elucidated. While there is a strong element of allergy, the question of blood volume must be considered. If the blood volume is increased beyond the height tolerated by the patient, the result is likely to be urticaria. It has been shown by the injection of large quantities of serum and of large quantities even of such an inert substance as acacia. These large quantities can be injected if the person is dehydrated or depleted or otherwise has less than normal blood volume. If he has a normal or a high blood volume, he breaks out into urticaria. The signs of serum sickness resemble those which occur with increased blood volume and they are successfully handled by methods that reduce blood volume. Of those I would emphasize the injections of epinephrine and sweating. These two work rapidly in the reduction of blood volume. Whether Dr. Bennett would like to try hypertonic solution of dextrose on patients with early disease or sweat them right away is a question to be decided later, but certainly the injection of epinephrine in cases in which serum sickness is developing has already been found of great value and I think should be pushed to the limit with patients showing signs of neuritic involvement.

DR. JOHN B. DOYLE, Los Angeles: In the decade between 1920 and 1930 the neurologic literature not infrequently

described cases of this sort. April 17, 1930, I had the opportunity of seeing a man aged 37 who had had a prophylactic injection of serum for scarlatina. Seven days later serum sickness developed. At the height of his pain marked weakness of the right deltoid and scapular muscles developed. Since that time I have had the opportunity of observing two additional cases. Apparently the meninges, the brain, the spinal cord, the nerve roots, the cords of the brachial plexus or the peripheral nerves may be affected. In the majority of cases, however, the brachial plexus has been involved. In a few instances there has been a clinical picture of mononeuritis. Sicard and Cantaloube have offered the explanation that this type of clinical picture is due to edema within the aponeurotic sheath of the affected nerve. To describe the mechanism they coined the term "neurodocitique." In all the cases of involvement of nervous structures associated with the upper limb the disturbance has been of a motor character. In about one fourth there have been additional sensory changes. In the plurality of cases, that is, in thirty of forty-two cases in the series I reported, the involvement was unilateral and purely motor and involved only the fifth and sixth cervical roots or their derivatives. An important clinical point made by Sainton in 1924 is that the process may not involve equally all the fibers of a given muscle but may spare bundles of varying size. This was true in three of the cases which I have encountered. The prognosis is far better than Dr. Bennett might lead us to believe. In his case 3 at the end of a year there was little if any improvement. There are, however, several factors to be considered. First, the patient was not treated at all for five months. During that interval there must have been profound stretching of the muscle. Second, a certain proportion of patient suffering from severe damage may not manifest return of normal sensation until as much as eighteen months has elapsed from the time of onset of symptoms.

DR. HYMAN I. VENER, Los Angeles: The problem of tetanus is my only reason for any comment regarding this excellent presentation. My experience with several hundred cases has convinced me of the grave seriousness of this disease. The California State Department of Health for the years 1920-1935 reported a fatality rate of approximately 75 per cent for a group of 1,000 cases. It is time the profession took cognizance of the situation. The occurrence of neuritis may be used as an excuse for withholding prophylactic antitoxin. Unfortunately, tetanus cannot be forecast. The apparent innocence of a wound is no criterion of the future result. The disease must be prevented by proper débridement and administration of prophylactic antitoxin. Over many years of active management of clinical tetanus, with an average dose per case of approximately 225,000 units of serum, I have not seen a patient, during hospitalization, in whom this complication developed. Some questions may arise: Was the refining process of the serum faulty? Was the serum used in all cases manufactured by the same biological firm? Could such mishaps have been avoided if the serum had been given intradermally and in divided doses? Is the problem one of individual susceptibility? Progress is being made in the manufacturing process to avoid just such untoward serum reactions. Tetanus toxoid is an excellent product, especially for allergic persons. However, there are too many variable factors to warrant dogmatic statements. Most studies conducted have dealt with adults, whereas the greatest incidence is among children. In man the amount of toxin that will cause clinical symptoms is not known, nor is the duration of immunity conferred known, so each case must be judged on its merits. When one is in doubt, prophylactic antitoxin should be administered. I hope that the problem will be solved in the near future and the occurrence of such cases as cited further diminished. The comparatively few complications following the administration of prophylactic antitoxin should not deter us from using it. When we consider the thousands of doses used daily for the prevention of the disease, which, once it occurs, has an extremely high fatality rate, we must rely on our clinical judgment and exert every possible precaution.

DR. HENRY R. VIETS, Boston: My experience is based on observation of seven cases, most of them in the last three years. As I remember my war experience, a great deal of horse serum was given and serum neuritis was rare. My observations on this subject are practically the same as Dr. Bennett's, with one or two exceptions. In the first place, it does not seem to make any difference where the horse serum is injected. In all my cases the principal nerves involved were the fifth and sixth cervical roots and, strangely enough, all on the right side. Dr. Bennett, I think, had three on the right and two on the left. Another striking thing is that in not all of my cases was the serum sickness severe. In two cases that I can recall it was slight. That differs a little from Dr. Freeman's report. There is marked atrophy of the deltoid and supraspinatus muscles, in spite of the fact that, in my experience, all patients have recovered almost entirely without any treatment. I have not used the treatment that Dr. Bennett suggests. I feel, therefore, that this syndrome of neuritis limited to the fifth and sixth cervical roots after administration of horse serum is perhaps increasing, and it is wise to have a paper of this type before this section so that all physicians will keep this disease in mind.

DR. TOM B. THROCKMORTON, Des Moines, Iowa: If I recall correctly, the injections in Dr. Bennett's cases followed only small or trivial traumatic conditions, whereas the case which came to my attention some years ago was that of a farmer who, while climbing a ladder into the hay loft, fell, striking on his head and shoulders. He had a slight concussion of the brain and his right hand was injured. He was afterward given the antitetanus and anti-gas gangrene serums, and after this weakness of the shoulder girdle on both sides developed. The question which came up in a study of his compensation was whether the weakness was traumatic as the result of the fall injuring either the spinal cord or, more particularly, the spinal root, or whether it was a serum neuritis from which he probably would eventually recover. I saw him within the last year. He has made some improvement, but he still has distinct muscular atrophy of the shoulder girdle on both sides and more particularly on the side on which the infection was more pronounced.

DR. LEOPOLD BRAHDY, New York: I have had one case of special interest in connection with this paper. The patient was given prophylactic tetanus antitoxin; paralysis developed on the left side, with left wrist drop, and he made a complete recovery after a few months. Three years later he received a second injection; the paralysis recurred, but this time there was no recovery—the lesion is permanent. I have followed him now for more than three years and there is no improvement. There was a marked alcoholic background in this case and I wish to ask Dr. Bennett to comment on whether an alcoholic basis was in evidence in his cases.

DR. L. H. ZIEGLER, Wauwatosa, Wis.: This is a timely and interesting study. I have observed two cases similar to those presented by Dr. Bennett in the last two or three years. I should like to present exceptions to the suggestion that the manifestation may be entirely explained by allergy. One often gets off the track when one sticks to a single etiologic concept too tenaciously. The persons who have been given this serum have usually been treated for a wound or some other illness which may have had some relation to the complication. The paralysis sometimes develops in the arm not inoculated. This should make one suspicious that something else may be going on. It is interesting to note that in four of the five cases that Dr. Bennett has presented the onset was in the summer, during the poliomyelitis season. I do not mean to imply that this disorder is poliomyelitis. Studies of spinal fluid have not been made, and little is known as yet about the pathology of the nervous system. However, there may be some relation to other disorders, such as an association of lesions of the nervous system with intraspinous anesthesia and damage to the nervous system from infections such as cowpox. I have a feeling that the explanation for these complications of serum prophylaxis may be due to some unusual local toxin or virus which has some relation to the lymphatic vessels of the peripheral nerves and perhaps the central nervous system.

DR. A. E. BENNETT, Omaha: I am glad Dr. Freeman brought out that the reaction is systemic and not local and is not dependent on the site of injection in any way. Dr.

Doyle's remarks about the prognosis, I think, are well taken. I could not determine accurately from the literature the percentage of persons who did not recover. There seemed to be a definite residual group, although many have not been followed long enough to justify certainty of this, and I have not been able to follow enough cases personally to be certain of it. Dr. Vener's remarks concerning the infrequency of complications in treating tetanus were extremely interesting. Under my observation at present is a young woman who, being treated for tetanus, received 300,000 units; at the height of her serum sickness complete transverse myelitis developed almost over night and she is not going to recover. The condition is permanent with her. It seems to me that there must have been intensive vascular involvement of the spinal cord in this case. I noticed recently in THE JOURNAL a report of a case of tetanus treated with 2,000,000 units of tetanus antitoxin. I feel that is an unnecessary amount of serum to be given to a patient. Dr. Viets's experience with cases of mild serum sickness is interesting. I noticed in the literature a few such case reported. I am glad to hear that all these patients have recoverd completely. Dr. Brahdy's observation of a reactivation by a second injection is important. This has been reported a number of times and is in my paper, but I could not bring it out. With regard to Dr. Ziegler's remarks, examinations of spinal fluid have been made in a number of these cases in the early stages. They show increased cell counts and protein contents.

PRIMARY CARCINOMA OF THE URETER

WITH REPORT OF SEVEN CASES

ALVIN G. FOORD, M.D.
AND
PAUL A. FERRIER, M.D.
PASADENA, CALIF.

The rarity of primary carcinomas of the ureter, together with the fact that they are often not even suspected, warrants the presentation of six proved cases and a probable seventh case. Caulk,[1] in his compiled series, together with Hunt [2] and others, found less than 7 per cent of renal tumors primary in the pelvis, while Thomas and Regnier [3] in 253 collected cases of carcinoma of the renal pelvis and ureter found 15 per cent primary in the ureter. These figures suggest that about 1 per cent of carcinoma of the upper part of the urinary tract originate in the ureter.

HISTORY

Wising and Blix [4] in 1878 reported the first authentic case with a microscopic diagnosis, an instance of medullary carcinoma with metastasis to retroperitoneal nodes, rectum and perineum. Up to 1900, eight cases had been reported, in all of which the diagnosis had been made at autopsy. Shortly after this, Albarran,[5] Gerstein [6] and Heresco [7] each made preoperative diagnoses of ureteral tumor by observing a papillary growth projecting from a ureteral meatus. A decade later, in 1912, a diagnostic sign was described by Chevassu and Mock,[8] who called attention to the free bleeding often provoked by the light touch of a ureteral catheter. The first case from the Mayo Clinic was reported in 1921 by Judd and Struthers.[9] In 1924 Kretschmer [10] reviewed the subject and reported a case. In 1930 Rousselot and Lamon [11] were able to collect fifty cases of primary malignant process in the ureter, adding a case. In 1931 Renner [12] reported finding three primary ureteral carcinomas in 13,854 autopsies in five years at the Vienna Pathologic Institute. In the same year Chauvin and Cerati [13] presented a comprehensive study and reported a case. In 1933 Colston [14] reported two cases from 22,000 urologic cases at the Brady Institute at Johns Hopkins Hospital. The first case from the files of the Massachusetts General Hospital was reported by Snyder and Wood [15] in 1933. In 1934 Scott [16] and Lazarus [17] each presented a study and compilation of cases, bringing the total to sixty-eight. Bergendahl [18] of Sweden in the same year presented his summary, with a total of seventy-six cases. In 1936 Schillings and Sondervorst [19] made a thorough study of the literature, presenting two cases and tabulating 113 of cancer of the ureter. In 1938 Rusche and Bacon,[20] reporting two cases, compiled forty of benign and ninety-six of malignant neoplasm. When ten cases not tabulated in any of these summaries (table 1) and our six cases are added, the number of cases of primary cancer of the ureter is 139. Thus in the past eight years eighty-nine cases have been reported, as against fifty in all previous records.

CLINICAL AND PATHOLOGIC FEATURES

Age.—The youngest patient was 22 and the oldest 89. There were three in the twenties, seven in the thirties, twenty-six in the forties, thirty-eight in the fifties, forty-four in the sixties, eighteen in the seventies and three in the eighties.

Symptoms.—The basic triad is hematuria, pain and mass. Hematuria was noted in ninety-seven or 70 per cent, of the 139 cases; in eleven there was no bleeding, and in thirty-one bleeding was not mentioned. The duration of bleeding was under three months in thirteen cases, from three to twelve months in thirteen, from one to two years in four and over two years in nine.

Pain is next in point of frequency (table 2). It occurred in eighty-four, or 60 per cent, of the cases and was noted to be absent in only eleven cases. Its

---

Owing to lack of space this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

Read before the Section on Pathology and Physiology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

From the laboratories of the Collis P. and Howard Huntington Memorial Hospital and the departments of urology and pathology, University of Southern California School of Medicine.

1. Caulk, J. R.: Tumors of the Renal Pelvis and Ureter, Ann. Surg. **106:** 68 (July) 1937.
2. Hunt, V. C.: Unusual Surgical Lesion of the Urinary Tract—Papillary Epithelioma of the Ureter, S. Clin. North America **7:** 1464 (Dec.) 1927.
3. Thomas, G. J., and Regnier, E. A.: Tumor of the Kidney Pelvis and Ureters, J. Urol. **11:** 205 (March) 1924.
4. Wising, P. J., and Blix, C.: Hygeia **40:** 468, 1878; cited by Schillings and Sondervorst.[19]
5. Albarran, J.: Epithélioma de la partie inférieure de l'uretère; résection urétéro-vésicale, Bull. et mém. Soc. de chirurgiens de Paris **32:** 669, 1906.
6. Gerstein, Kurt: Ein Fall von primären Krebs der rechten Ureterenmündung, Inaugural Dissertation, Kiel, P. Peters, 1902; cited by Bergendahl.[18]
7. Heresco, Pierre: La cystoscopie appliquée au diagnostic des tumeurs uretérales, Ann. d. mal. d. org. genito-urin, 1909; cited by Chauvin and Cerati.[13]
8. Chevassu, M., and Mock, J.: Epithélioma de la partie moyenne de l'uretère, Bull. et mém. Soc. de chirurgiens de Paris **38:** 522, 1912.
9. Judd, E. S., and Struthers, J. E.: Primary Carcinoma of the Ureter: Review of the Literature and Report of a Case, J. Urol. **6:** 115 (Aug.) 1921.
10. Kretschmer, H. L.: Primary Carcinoma of the Ureter with the Report of a Case, Surg., Gynec. & Obst. **38:** 47 (Jan.) 1924.
11. Rousselot, L. M., and Lamon, J. D.: Primary Carcinoma of the Ureter, Surg., Gynec. & Obst. **50:** 17 (Jan.) 1930.
12. Renner, M. D.: Primary Malignant Tumors of the Ureter, Surg., Gynec. & Obst. **52:** 793 (April) 1931.
13. Chauvin, E., and Cerati: Les tumeurs épithéliales primitives de l'uretère, Arch. d. mal. de reins **5:** 631, 1931.
14. Colston, J. A. C.: Primary Tumor of the Ureter, Bull. Johns Hopkins Hosp. **56:** 361 (Dec.) 1934.
15. Snyder, W. H., and Wood, B. S.: Primary Carcinoma of the Ureter with Report of a Case, J. Urol. **29:** 577 (May) 1933.
16. Scott, W. W.: Primary Carcinoma of the Ureter, Surg., Gynec. & Obst. **58:** 215 (Feb.) 1934.
17. Lazarus, J. A.: Primary Tumors of the Ureter with Special Reference to the Malignant Tumors, Ann. Surg. **99:** 769 (May) 1934.
18. Bergendahl, Seved: Clinical Study of Malignant Tumours of the Ureter, Acta chir. Scandinav. **74:** 179, 1934.
19. Schillings, M., and Sondervorst, F. A.: Les Tumeurs malignes primitives de l'uretère, Rev. belge sc. méd. **8:** 16 (April) 1936.
20. Rusche, Carl, and Bacon, S. K.: Primary Ureteral Neoplasms, J. Urol. **39:** 319 (March) 1938.

duration varied from less than three months to many years. It is most commonly a dull ache in the region of the kidney but occasionally a colicky ureteral pain. When the tumor invades the neighboring organs and muscles, pain is constant and sometimes referred to the solar or hypogastric plexus. Extension to pelvic organs causes a perineal ache referred down the legs. Sciatic pain may be severe. Involvement of the bladder may cause intense dysuria. Bone metastasis has its type of pain. In Hunt's case the process metastasized to the brain and was explored as a brain tumor.

The tumor palpated is nearly always the hydronephrotic kidney. It is possible, however, for the kidney to be completely obstructed and not enlarged, as in our first case. It is rarely possible to palpate a tumor of the upper part of the ureter. In our case 4 a tumor of the midureter was palpated, and in cases 2 and 3 a fixed stony mass was felt by rectum above the prostate.

Urine.—Cases have been reported in which the urine was normal, but red blood cells are probably always present at some time. Pus is generally present, since infection commonly occurs sooner or later. When the growth is papillary, tumor cells or even fragments of growth may be found occasionally.

X-Ray Examination.—On the flat plate an enlarged renal mass is often distinguishable. Coincident stones may rarely appear, but they seem to have little etiologic significance. Metastases in the lungs and bones should be looked for.

Cystoscopic Examination.—It is important that this be done while the bleeding is in progress, as a leading point is won by visualizing the bleeding meatus. This was observed in twenty-six of eighty-one cases in which cystoscopic examination was performed (table 3). One should note the character of the jet. Blood from the kidney or upper part of the ureter is likely to be ejected in normal spurts, while a bleeding tumor in the lower part of the ureter will give a feeble spurt, often only a drip. The meatuses may appear entirely normal or there may be congestion or pouting on the affected side. Tumor tissue was observed to project in thirty of seventy-eight cases. The projecting tumor may so obscure the meatus that it is impossible to determine whether it originates in the ureter or at the edge of the meatus. A tumor may peep through the meatus only during ureteral peristalsis, or a telltale bulge may occur at that time. Observation of the ejection of indigo carmine may make more plain the alteration of the peristaltic jet or its absence.

With a great proportion of ureteral tumors there is a complete block, and no catheter or bougie will pass beyond the tumor. This was observed in fifty cases. Chevassu and Mock in 1912 called attention to bleeding through or around the catheter, induced by slight catheter trauma. This was noted in seventeen cases. Of course this is not pathognomonic, since congestion around a stone or a benign lesion may bleed. It is entirely possible for a carcinoma to be present without any bleeding, either spontaneous or induced. Marion noted that, while blood might be coming through the ureter, a catheter passing beyond the tumor might drain off clear urine. Blood, however, may retrograde from the tumor to the renal pelvis.

Urograms.—Excretory urograms usually show no dye in the affected side. They may faintly outline a hydronephrosis or, rarely, show a normal kidney on the affected side. The excretory urogram is inadequate to outline satisfactorily a ureteral filling defect. A catheter may not enter. It may not be possible, even with a Garceau catheter, to distend the lower part of the ureter. However, with a tight catheter in the lower part of the ureter and the patient in the Trendelenburg position, a gravity flow with the least induction of spasm may give a satisfactory urogram. Serial pyelograms after Moore's [21] method are desirable to show constant filling defects. Clots may cause a false filling defect. Rusche and Bacon obtained a clear picture of a filling defect due to a ureteral tumor by passing a ureteral catheter to the pelvis, drawing it down and injecting at different levels, with a picture of each. Air pyelo-urograms were advocated by Neuwirth [22] in 1924. If the medium passes the obstruction a hydronephrosis is seen with a ureter dilated down to the tumor. If the obstruction is not passed, the medium may distend an atonic ureter. If the catheter does not fit snugly, only a cystogram may result.

TABLE 1.—*Cases Reported in Addition to Those Listed in the Tables Compiled by Schillings and Sondervorst and Rusche and Bacon*

Reference	Age, Sex	Diagnosis	Pathology
Cross, John B.: J. M. A. Georgia **20**: 125 (April) 1931	48 ♂	No urologic examination	Solid carcinoma, lemon size, involving iliac vessels
Ito, Seitaro: Ztschr. d. japan chirurg. Geseilsch. **36**: 64, 1935	63 ♀	Hydronephrosis	Papillary carcinoma, middle and lower third
Taylor, W. N., and Kuehn, C. A.: Tr. North Central Br. Am Urol. A., September 1936, p. 40	54 ♂	Tumor of ureter	Papillary carcinoma, grade 2, lower half
Ibid.	76 ♀	Tumor of ureter	Papillary carcinoma, grade 3, middle third
Gilbert, J. B.: Am. J. Surg. **36**: 710 (April) 1937	68 ♂	No urologic examination	Squamous cell carcinoma, lower third
Lyall, Alexander: Brit. M. J. **2**: 961 (Nov. 13) 1937	37 ♀	No urologic examination	Papillary carcinoma, entire ureter; no hydronephrosis
Marion and Kogan, Mlle.: J. d'urol. **43**: 364 (April) 1937	60 ♂	Tumor of ureter? Stone?	Papillary carcinoma, middle third
Mayock, P. P., and Baurys, William: Pennsylvania M. J. **40**: 953 (Aug.) 1937	52 ♂	Cancer of ureter	Papillary carcinoma, lower 2 cm.
O'Brien, H. A.: J. Urol. **37**: 49 (Jan.) 1937	67 ♀	Papillary carcinoma of ureter	Papillary carcinoma, grade 1, lower two thirds
Parker, Geoffrey: J. d'urol. **35**: 38 (Jan.) 1938	61 ♂	Tumor of ureter	Pedunculated papillary carcinoma, middle third, low grade

The form of filling defect may be (1) a ringlike obstruction, narrow or wide, (2) a single pedunculated or sessile mass or (3) a ragged, moth-eaten condition from papillary involvement, which may extend the whole length of the ureter. The only pathognomonic sign of primary ureteral tumor is a characteristic and constant filling defect, together with a pyelogram excluding renal neoplasm. Periureteral growths, traction and inflammation have not been a source of error. Coincident stone has caused error.

It must be borne in mind that a bleeding papilloma may be so small, no bigger than a grain of wheat, that it produces no obstruction to a ureteral catheter, no filling defect, not even a palpable mass when the ureter is exposed surgically. If a nephrectomy has been done for bleeding and the kidney does not explain the source, prompt ureterectomy is indicated unless benign ureteral disease is demonstrated. Many operations have been done with the expectation of finding a renal neoplasm. At a second operation the ureteral cancer was removed. Peacock [23] recently reported a case in which another

21. Moore, T. D.: Consideration of Ureter in Serial Pyelograms, South. M. J. **27**: 825 (Oct.) 1934.
22. Neuwirth, K.: Vienna Urologic Society, Ztschr. f. urol. Chir. **25**: 477, 1928.
23. Peacock, Alexander: Personal communication to the author.

surgeon had removed the kidney, leaving a ureteral tumor, which by delay had become inoperable. Table 4 summarizes the diagnoses made in the reported 139 cases.

Pathology.—In the cases so far reported, the lower end of the ureter has been by far the commonest place for the tumor to appear, eighty-five of the tumors having been located in the lower third, twenty-three in the middle third, twenty in the upper third, six in the

TABLE 2.—*Pain with Ureteral Carcinoma*

Incidence		Duration of Pain	
No pain	16	Less than 2 months	14
Renal	60	3 to 12 months	22
Pelvic	17	1 to 2 years	23
Renal and pelvic	3	Over 2 years	12
Ureteral colic	3	Duration not stated	13
Epigastric	1		
Unstated	39		

entire ureter, two in the middle and lower thirds and one in the upper and middle thirds. No location was given in two cases. All degrees of involvement of the ureter from small localized lesions to massive involvement of long segments have been reported; in many cases one third or more of the ureter was involved. Because of marked differences in the terminology used, it is difficult to classify some of the tumors accurately. However, the tumors closely resembled those in the bladder, and, of the 139 reported, seventy-five were papillary, sixty were some type of solid, nonpapillary tumor, three were reported as adenocarcinoma and one was unclassified. There is insufficient evidence for us to agree with the authors who reported the adenocarcinoma. Small papillary growths mentioned here and there in the literature are often classified as benign tumors, but none of these are included in our summary of the literature. However, from experience with tumors of the bladder, we feel that these should be considered as low grade malignant processes, since recurrence is such a common clinical experience.

A satisfactory grouping is as follows:

1. Papillary carcinoma.

(*a*) The so-called single pedunculated papilloma, sometimes called benign.

(*b*) The single pedunculated solid-appearing carcinoma which distends and blocks the lumen. Such carcinoma show microscopically some papillary structure.

(*c*) The single papillary carcinoma with a sessile invaded base.

TABLE 3.—*Cystoscopic Data*

Number of cases studied	81
Ureteral tumor visible	30
Ureteral tumor visible only during peristalsis	2
Bleeding from meatus	26
Congested meatus	7
Impassable obstruction to catheter	50
Catheter trauma (Chevassu and Mock)	17
Blood from meatus; clear urine from catheter above tumor	3
Associated tumor of bladder	6

(*d*) The diffuse papillary carcinoma showing multiple growths, often extending nearly the entire length of the mucosa of the ureter. Such carcinomas may or may not thicken the underlying wall very much.

2. The solid, nonpapillary carcinoma which begins as a localized lesion. This may continue as a localized diffuse thickening of the wall, but it commonly grows so as to thicken markedly the wall and involve its entire circumference. It is notoriously invasive and spreads commonly for considerable distances in the wall of the ureter and often into neighboring tissues.

It is possible that, as in the bladder, the tumor may start as a papillary growth which invades the underlying wall, the superficial papillary portion may slough away because of interference with the blood supply, and the remaining tumor may be considered a solid, nonpapillary invasive tumor when seen with the naked eye.

Many histologic classifications are given in the literature, but a simple classification similar to that used for cancers of the bladder appears most satisfactory. The tumors can therefore be classified as papillary and nonpapillary growths and the latter graded numerically as squamous cell neoplasms according to Broders'[24] classification. On the whole, the cancers reported have shown approximately the same histologic patterns and the same degrees of malignancy as would be expected in a series of cancers of the bladder.

TREATMENT

All authorities agree that the treatment of choice is early surgical extirpation, which means nephrectomy and ureterectomy.

For forty-four nephro-ureterectomies in one stage the mortality was 40 per cent, while for twenty-two nephro-ureterectomies in two stages the mortality was 5 per cent.

TABLE 4.—*Diagnosis in 139 Cases*

Tumor of ureter	54	Ureterocele	1
No diagnosis	34	Prostatic hypertrophy	1
Hydronephrosis	7	Prostatic abscess	1
Tumor of kidney or ureter	6	Rectal cancer	1
Tumor of kidney	6	Dermoid cyst	1
Stone in ureter	5	Osteosarcoma of the ileum	1
Tumor of bladder	4	Tumor of the ovary	1
Tumor or stone in ureter	3	Salpingitis	1
Tumor of gastrointestinal tract	2	Cancer of undetermined origin	1
Retrovesical tumor; origin ?	2	Stricture of ureter	1
Tumor in pelvic organs	2	Tuberculosis of ureter	1
Ectopic kidney	1	Intestinal or ureteral tumor	1
Pyonephrosis	1		

If a certain diagnosis has been reached, preoperative roentgen treatment is justified. Postoperative roentgen treatment is of some value, particularly to relieve the pain of extension and metastasis.

PROGNOSIS

For a total compiled series of 100 operations, the three month mortality was 34 per cent. Scott in 1934, in an effort to follow collected cases in which operation was performed, could find only two patients alive after five years. One patient reported on by Krafft[32] was well eleven years after a nephro-ureterectomy for papillary epithelioma of the lower part of the ureter. Vorpahl's[33] patient lived eight years after a nephrectomy and partial ureterectomy and died with general metastasis. The growth was squamous. Crance and Knickerbocker[34] reported that a patient was well eight years after a nephro-ureterectomy for a nonpapillary cancer.

In general the early and the late prognosis are very unfavorable.

REPORT OF CASES

Pathologic studies, including surgical and post-postmortem examination, were done by one of us (A. G. F.) in all the cases except case 6, which was

24. Broders, A. C.: Squamous-Cell Epithelioma of the Lip: A Study of 537 Cases, J. A. M. A. **74**: 656 (March 6) 1920.

32. Krafft, S.: Fälle von primären und sekundären Ureterpapillom, Ztschr. f. Urol. **16**: 385, 1922.

33. Vorpahl, K.: Ueber ein primäres Carcinom des Ureters, Am. J. Urol. **2**: 509, 1905.

34. Crance, A. M., and Knickerbocker, H. J.: Primary Carcinoma of the Ureter, J. Urol. **17**: 157 (Feb.) 1927.

provided by Dr. Newton Evans and Dr. C. B. Coggin. Urologic studies, by one of us (P. A. F.), were performed only in cases 1 and 2.

CASE 1.—Mrs. I. M. J., white, aged 69, who entered the Huntington Memorial Hospital Feb. 27, 1934, had first noted painless hematuria one year before, with complete remission for five months. It recurred and continued in severe form. The hemoglobin content dropped to 66 per cent (Newcomer).

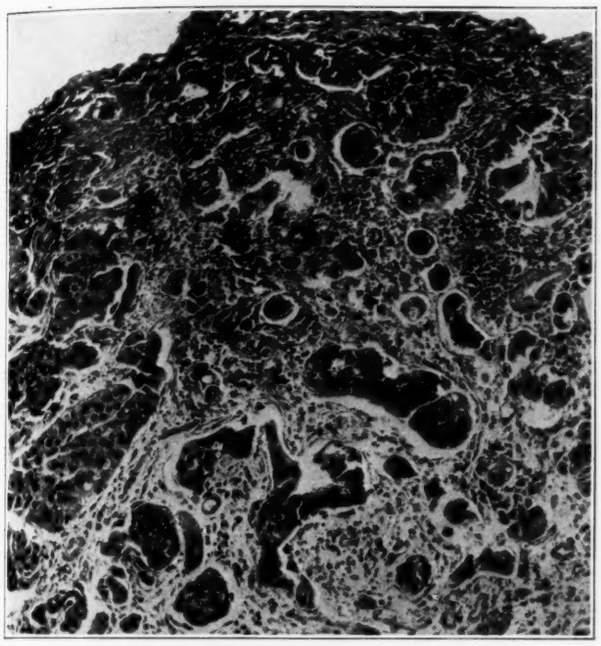


Fig. 1 (case 1).—Ureteral wall, showing nests of poorly differentiated squamous cells invading widely.

She lost 20 pounds (9 Kg.) and looked ill. The heart and lungs were normal. The blood pressure was 130/70. The urine showed gross blood, a few pus cells and casts. In the phenolsulfonphthalein test 15 per cent was excreted the first hour and 15 per cent the second hour. Roentgenograms of the kidneys, ureters, bladder and lungs were normal. An intravenous urogram showed a normal left renal outline and no shadow on the right. Cystoscopic examination showed blood trickling from a relaxed right meatus, without spurts. Otherwise the results were negative. No tumor protruded. Indigo carmine was excreted heavily on the left and not at all on the right. Catheters on the right side met with an impassable obstruction below the brim of the pelvis and caused increased bleeding. A ureterogram showed a relaxed right ureter, completely obstructed just below the pelvic brim. There was no irregularity of the wall.

The diagnosis was tumor of the right ureter, possibly secondary to renal tumor. Through curved loin and right rectus abdominal incisions, a right nephro-ureterectomy was done. The tumor was limited to the middle third of the ureter and was adherent to the fascia surrounding the common iliac vessels; the iliac and para-aortic vessels were not indurated. As the growth was obviously squamous and not papillary, the mural ureter was not removed. No radiation was given.

The patient lived comfortably for over a year, then began to have sciatic pain on the right side and pain in the chest, and she died with metastases in the liver and lungs, as shown by a nodular liver and a roentgenogram of the chest. No autopsy was performed.

The pathologic specimen consisted of a right kidney and 22 cm. of ureter. A segment of ureter 2 cm. long beginning at a point 14 cm. from the pelvis was thickened to 1.2 cm. in external diameter, and on section gray, homogeneous, fairly firm tumor tissue was seen to fill the lumen and to invade the wall. Dilatation of the ureter to 1.5 cm. in circumference with moderate thickening was noted above the tumor. Numerous small dilated veins were seen in the mucosa just below the tumor. Marked simple hydronephrosis with fibrosis and atrophy of the parenchyma, so that it was only 12 or 13 mm. thick, was present in the kidney, which measured only 9 by 5 by 3 cm.

Microscopic examination showed the tumor to be a solid, nonpapillary, poorly differentiated (grade 3) squamous cell growth (fig. 1) arising from and replacing the mucosa and infiltrating the entire wall in various-sized nests, about which moderate fibrosis was present. The tumor cells were medium sized, noncornified squamous cells varying much in size and shape and showed many mitotic figures. Portions of the ureteral epithelium not involved by the tumor showed slight squamous cell metaplasia. The kidney showed simple hydronephrotic atrophic and fibrotic changes.

The diagnosis was solid, nonpapillary, poorly differentiated squamous cell carcinoma (grade 3) of the lower end of the ureter, 8 cm. from the bladder, with complete obstruction, moderate hydro-ureter and marked hydronephrotic atrophy and fibrosis of the kidney.

CASE 2.—J. L., a white man aged 82, who entered the Huntington Memorial Hospital March 4, 1938, claimed that he had had good health up to one month previously, when he began to have vague abdominolumbar pain on the left side with gross hematuria and loss of weight and strength. Ten years previously a benign prostatic growth had been removed suprapubically. There was fulness without tenderness in the left renal fossa. The prostatic bed was firm, and above it on the left was a hard, fixed mass. The blood pressure was 160/80. Roentgenograms of the kidneys and bladder showed nothing abnormal except ill defined density in the left renal area. An intravenous urogram showed a normal right side but no dye on the left. Cystoscopic examination with spinal anesthesia showed the bladder neck high and fixed. Many clots were evacuated. The right meatus appeared normal, but the left could not be visualized on account of a tumor mass which seemed to elevate the floor of the bladder on the left and to invade it as a mass 2 cm. in diameter where the meatus should have been. Biopsy showed an invasive squamous tumor consistent with vesical or ureteral origin. A diagnosis of cancer of the ureter was made.

Bleeding was controlled by coagulation, but the next day the bladder was again filled with clots. After transfusion, the left kidney and 16 cm. of the ureter were removed. The kidney was greatly distended with clear urine. The tumor of the ureter extended from the pelvic brim underneath the bladder so extensively as not to be operable even to stop hemorrhage. Despite coagulation, hemorrhage continued and the patient died six days later.

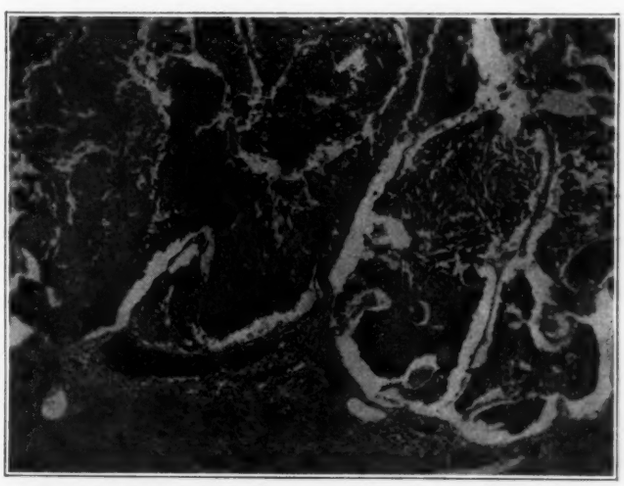


Fig. 2 (case 2).—Wall of ureter, showing papillary portions and areas of squamous cell differentiation.

The surgical specimen showed by gross and microscopic examination a simple profound hydro-ureter and hydronephrosis, with atrophy and fibrosis of the renal parenchyma. The ureter averaged from 23 to 28 mm. in circumference. The kidney measured 11 by 5.5 by 3 cm.

Autopsy revealed a firm, sausage-like enlargement of the distal 10 cm. of the left ureter, from 3 to 4 cm. in diameter, firmly fixed to the surrounding tissues. The lumen of the distal 7 cm. was distended to from 1.5 to 2 cm. by a soft, papillary, partially necrotic tumor, and a diffuse gray tumor was seen throughout the thickened wall. A continuation of this growth extended into the left lobe of the prostate and into the bladder wall, pushing up the mucosa. The regional and periaortic lymph nodes were not involved, but there were multiple metastases in the pleura of both lungs and scattered nodules in the lung parenchyma and liver. None were found in the bones. No other source of primary tumor was found.

Microscopic examination of the ureter (fig. 2) showed the ureteral tumor to arise from and replace the mucosa. The tumor cells showed both papillary stalk formation and solid nests of squamous cells, sometimes with keratinization, which extensively invaded the wall. The bladder and prostate showed extension of squamous cell carcinoma from without.

The final diagnosis was partially papillary and partially solid squamous cell carcinoma (grade 3) of the distal end of the left ureter, with extension to the bladder and left lobe of the prostate and metastases in the lungs and liver.

CASE 3.—E. L., a white man aged 65, who entered the Los Angeles General Hospital Dec. 12, 1936, had first noticed painless hematuria one year before. Three months before the bladder had filled with clots, but for six weeks there had been no bleeding. He complained of pain in the perineum, running down both legs, and swelling of the left leg. There were marked loss of weight and weakness. The patient was well developed, and a general examination gave negative results. The kidneys were not palpable. The external genitalia were normal. With rectal palpation the prostate seemed small; the right lobe was soft and the left firm. To the upper part of the left lobe was attached a stony-hard, fixed mass which extended up beyond the palpating finger.

Roentgenograms of the kidneys, ureters and bladder were normal. An intravenous urogram showed a normal right kidney but no dye on the left in thirty minutes. A cystogram

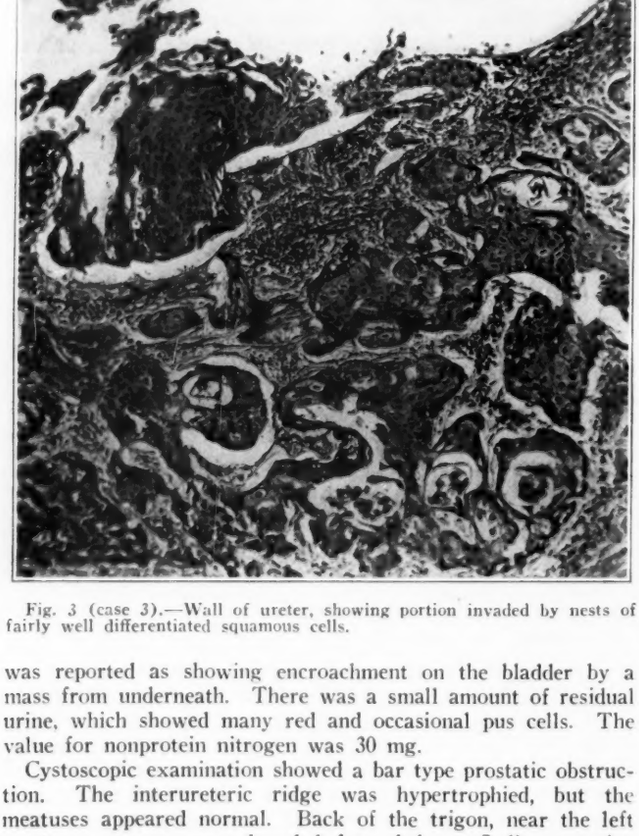


Fig. 3 (case 3).—Wall of ureter, showing portion invaded by nests of fairly well differentiated squamous cells.

was reported as showing encroachment on the bladder by a mass from underneath. There was a small amount of residual urine, which showed many red and occasional pus cells. The value for nonprotein nitrogen was 30 mg.

Cystoscopic examination showed a bar type prostatic obstruction. The interureteric ridge was hypertrophied, but the meatuses appeared normal. Back of the trigon, near the left meatus, a tumor mass invaded from below. Indigo carmine came intensely from the right but not from the left. Catheters met an impassible obstruction just above the left meatus but caused no bleeding. No ureterogram could be obtained for the left side. Biopsy of the mass showed squamous cell cancer. A clinical diagnosis of cancer of the bladder was made. The mass was fulgurated heavily, and the patient was referred to the California Institute of Technology for high voltage roentgen therapy. A total of 6,900 roentgens was given in four weeks

Fig. 4 (case 4).—Ureteral wall, showing widespread invasion by squamous cells.

through four portals. The disease progressed; loss of weight and strength was rapid. The liver enlarged, the left leg became markedly swollen and death occurred one month after the last roentgen treatment.

At autopsy the distal extravesical 8 cm. of the left ureter was seen to be profoundly thickened by a hard tumor growth so that it was from 2 to 4 cm. across, and it was firmly bound to the pelvic tissues, especially at the pelvic brim, where tumor had extended into and occluded the common iliac vein. The midportion was from 1 to 2 cm. thick. Above the tumor there was marked dilatation of the proximal 10 cm. of the ureter and of the pelvis, by thick pus. Marked fibrosis of the renal parenchyma was present. The mucosa of the bladder was intact, and no evidence of tumor of the bladder was seen. Massive metastases were found in the liver, and several biliary lymph nodes contained tumor. Soft tumor nodules were found in the fourth lumbar and upper sacral vertebrae. No tumor was found in other parts of the body.

Microscopic examination through various levels of the ureter showed a solid squamous cell tumor growth (grade 2) arising from and replacing the mucosa and in many places growing throughout the entire wall in irregular nests (fig. 3). Some of the cells showed keratinization, but most of them were fairly small and poorly differentiated. The metastases showed similar tumor.

The postmortem diagnosis was solid, nonpapillary, poorly differentiated squamous cell carcinoma (grade 2) of the lower and middle portion of the left ureter, with stenosis and pyoureter, pyonephrosis, fibrosis of the renal parenchyma, metastases to the liver, biliary lymph nodes and spine, and tumor thrombosis of the left common iliac veins.

The tumor which pushed up the bladder mucosa and was destroyed by fulguration by the clinician was an extension from the ureter. The only bladder growth present at autopsy in multiple sections was found in the mucosa of the mural portion of the ureter. The extent of the tumor-bearing portion of the ureter from the bladder to 10 cm. from the pelvic junction was unique.

CASE 4.—F. W., a white woman aged 22, the mother of three children, a patient of Dr. R. G. Tucker, entered the Alhambra Hospital Aug. 8, 1933, complaining of constant severe pain in the left part of the pelvis and the left thigh of three months' duration. This pain had increased until opiates were required. There were loss of weight and moderate fever with night sweats. There was no dysuria or gross hematuria. The young woman was pale, in pain and evidently ill. An extremely tender mass 5 cm. in diameter was found just above the pelvic brim on the left side. A mass was palpated high in the side of the pelvis and considered to be tubal. Pelvic examination otherwise showed only a lacerated cervix without tumor. The head, chest and extremities were normal. The urine did not contain blood or pus. A blood count showed 4,100,000 red blood cells, 17,500 leukocytes, hemoglobin content 60 per cent, neutrophils 75 per cent, lymphocytes 21 per cent, monocytes 3 per cent and basophils 1 per cent. No urologic study was made.

The clinical diagnosis was tubo-ovarian abscess. Through a lower midline incision the pelvic organs were found to be normal and the mass was found to be retroperitoneal over the psoas muscle. Fluctuation was present and the mass was drained. Much necrotic tissue and pus was evacuated. Biopsy of the wall of the mass showed squamous cell carcinoma (grade 3), origin undetermined. Profuse drainage continued for four weeks, with the temperature up to 102 F. Severe pain persisted, the mass enlarged and edema of the left leg developed. Death occurred September 12.

At autopsy the left ureter showed a roughly sausage-shaped tumor, in places from 5 to 6 cm. thick, involving a segment 12 cm. long, beginning 8 cm. from the kidney. It had invaded widely the retroperitoneal tissues, especially the pelvic brim and psoas muscle. Large areas of suppurative (Staphylococcus aureus) necrosis were found throughout the mass. The distal 4 cm. of the ureter was not involved by tumor. The ureter above the growth was distended to 3 cm. in circumference and was filled with thick purulent urine, as were the markedly dilated pelvis and calices. Many small abscesses were present in the kidney, which measured 12 by 6 by 4.5 cm. Metastases were present in the left iliac and periaortic nodes. Numerous septic infarcts were found in both lungs. No extra-ureteral primary tumor was found.

Microscopic examination showed a solid squamous cell growth arising from and replacing the mucosa and invading the markedly thickened wall and the periureteral tissue. Some portions showed keratinization, and other portions showed less differentiated small polyhedral squamous cells (fig. 4).

The final diagnosis was solid, nonpapillary squamous cell carcinoma (grade 3) of the middle and lower portion of the left ureter, with pyemia due to Staphylococcus aureus and infarcts in both lungs.

CASE 5.—H. W., a white woman aged 72, was seen at home in the terminal stages of her illness by Dr. R. C. Olmsted, and no urologic examination was possible. She died with symptoms of obstructive vomiting, and a tentative diagnosis of carcinoma of the pylorus was made.

At autopsy the distal third of the right ureter was seen to be thickened to 3 cm. in diameter by a tumor-bearing portion involving a segment 3 cm. long, the lower border 2.5 cm. above the bladder. The lumen was completely obliterated. Extension into the broad ligament had occurred and there was widespread metastasis to the abdominal lymph nodes, with many implants in the peritoneum. Marked hydro-ureter and hydronephrosis were present. The duodenum showed an indurated benign ulcer 8 cm. broad and 8 mm. deep, with marked fibrosis and stenosis of the pylorus. There was no primary malignant growth in any organ except the right ureter.

Microscopic examination showed the tumor of the ureter (fig. 5) to arise in the mucosa and to grow through the entire wall and into the periureteral tissue in the form of irregular nests of squamous cells. An occasional pearl was seen, but most of the cells were less differentiated and nonkeratinized. The metastases were similar.

The diagnosis was primary squamous cell carcinoma (grade 3) of the right ureter with marked hydro-ureter and hydronephrosis, metastases to the abdominal nodes and peritoneum, and indurated benign ulcer of the duodenum with pyloric stenosis.

CASE 6.—J. M., a white man aged 69, who entered the Los Angeles General Hospital Nov. 18, 1935, had been in excellent health until one year previously, when sciatic pain developed on the right side. After two months this disappeared, but then he began to have pain in the right side of the pelvis, which later moved to the upper part of the abdomen. During the year he had lost 50 pounds (23 Kg.), and in the last three months he had become jaundiced. Twice in the last two months he had had terminal hematuria. He was nauseated and acutely ill on admission.

Examination showed emaciation and moderate jaundice. The liver was nodular and extended almost to the umbilicus. A tender mass 6 cm. in diameter was present in the right upper posterior quadrant of the abdomen and moved with respiration. The lungs were normal. The blood pressure was 160/90. The prostate was reported normal. The patient went to the general medical ward because of the jaundice and was not studied urologically. A tentative diagnosis was made of cancer of the right kidney or cancer of the stomach. He died five days after admission.

At autopsy, performed by Dr. Newton Evans and Dr. C. B. Coggin, the right ureter showed a solid tumor growth 2 cm. long at a level 5 cm. above the bladder, thickening it to 2 cm. across and producing complete obstruction. Marked distention of the ureter and pelvis by thick purulent exudate was present above the tumor, and there were numerous abscesses in the renal parenchyma. Metastases were found in the common iliac and lower periaortic lymph nodes and in one left supraclavicular node, and massive metastases were present in the liver, which weighed 3,900 Gm. No primary tumor was found in any organ other than the ureter.

Microscopic examination of the ureter (fig. 6) showed replacement of the mucosa by an irregular growth of poorly differentiated nonkeratinized squamous cells, varying considerably in size and shape and showing moderate hyperchromatism of the nuclei. The wall of the organ was infiltrated and markedly thickened by a similar growth. The metastases in the liver were of similar structure.

The diagnosis was solid, nonpapillary, poorly differentiated squamous cell carcinoma (grade 3) of the lower end of the right ureter, infected hydro-ureter and hydronephrosis, multiple renal abscesses, metastases in the iliac, periaortic and supraclavicular lymph nodes, and massive metastases to the liver with moderate jaundice.

COMMENT

Of particular interest is the widespread extension of tumor in all the cases except case 5. The sausage-like growth in cases 2, 3 and 4 was quite striking. Metastases were found in all our cases.

SUMMARY

1. In our six cases of proved as well as in 133 cases compiled from the literature, the tumors were most commonly found in the end of the ureter, and in about 30 per cent they protruded into the bladder. They varied from minute papillary growths to widely invading massive squamous growths. Their histologic picture was similar to that of carcinoma of the bladder.

2. Hematuria, pain and palpable abdominal mass (usually a hydronephrotic kidney) were the chief clinical features.

3. Diagnosis is based on bleeding from one ureter, together with obstruction or a filling defect as shown by urogram, or by observation of a tumor protruding into the bladder.

4. The treatment of choice is nephro-ureterectomy. A two stage operation is much the safest. Late diagnosis often limits treatment to lesser surgical intervention and palliation.

5. The prognosis is bad. However, three eight year cures have been reported.

NOTE.—Since this paper was written, five additional cases have been described by Charles C. Higgins (Primary Carcinoma of the Ureter, *Ann Surg.* **108**:271 [Aug.] 1938).

HEMATOGENOUS TUBERCULOSIS AND SILICOSIS

THE ROENTGEN DIAGNOSIS OF TUBERCULOSILICOSIS

JACOB GERSHON-COHEN, M.D.
AND
LOUIS COHEN, M.D.
PHILADELPHIA

HEMATOGENOUS TUBERCULOSIS

Tuberculosis is an infectious disease which it is conceded may invade the blood stream. The acute forms of miliary tuberculosis seen in the young and often as a terminal phase of chronic ulcerative pulmonary tuberculosis are the forms of blood stream infection familiar to the clinician. More occult and less well recognized are the subforms of miliary tuberculosis which heal. These are more often recognized by the roentgenologist than by the pathologist or clinician. There is plenty of laboratory evidence to prove the occurrence of tuberculous bacteremia without lethal consequences, but it is not our purpose to enter into this somewhat controversial aspect of the problem. We believe not only that the tubercle bacillus does gain access to the blood stream more frequently than usually admitted but also that certain definite histologic reactions follow which are demonstrable in roentgenograms of the lungs, that is, of course, if the lesser circulation becomes involved. These reactions confirm Ranke's [1] ideas about the allergic histologic changes seen at this time. The reaction is a marked lymphocytic invasion of the perifocal tissues about the tubercle with a marked exudative response. This may be followed by rapid central necrosis and cavity formation or by slow resolution, with or without scar tissue formation. The various manifestations of this phase of the disease have been completely analyzed and classified on a clinical basis by Neumann.[2] The remarkable thing about this classification is that, though done on a clinical basis without much aid from roentgen studies, it is admirably suited for roentgenologic use. His divisions are (1) typhotuberculosis of Landouzy, (2) proliferative primary complex, (3) polyserositis and pleurisy in its various forms, (4) tuberculosis fibrosa diffusa, (5) tuberculosis fibrosa densa, (6) fibro-ulcerative tuberculosis following fibrosa diffusa or densa and (7) "phthisis cavitaria ulcerosa."

These terms are very descriptive, and examples of each of the forms, once seen, are easily remembered. We are here concerned only with diffuse fibrous and discrete miliary or acinonodular forms because of their close resemblance to silicosis, but their appearances vary according to such readily recognized factors as bacterial virulence, resistance of the host, morphologic and functional changes of the parts involved and frequency and intensity of seeding of the organism. Characteristic of all forms is a tendency to resolution or fibrosis of the lesions with only a mild systemic reaction of the host (fig. 1). This results in the exhibition of few symptoms, among which fatigue is most prominent. Probably more than half of the cases end in healing, often without recognition of the cause by the family physician. Only when trigger symptoms appear, like hemoptysis, cough and expectoration or pleurisy, does the physician suspect a tuberculous basis. In serial roentgenograms the lesions are characterized by a predominance of fibrous tissue formation, which frequently leads to calcification (fig. 2). (It is precisely these changes that often mimic silicosis but which present, none the less, differences in pathogenic characteristics.) Patients who recover after having passed through this stage of tuberculous infection, though they may have advanced through the progressive ulcerative forms with widespread intracanalicular extensions, often live to old age, with permanent scars demonstrable in serial roentgenograms. It seems true that lung reinfection is more frequently encountered in these tuberculous patients than in subjects who have escaped tuberculosis. Barring such supervening accidental infections, however, these subjects may live to old age, only to succumb to heart failure because of the heavy load the right side of the heart sustains as a result of the increased resistance in the lesser circulation.[3]

SILICOSIS

Changes develop in the lungs in silicosis very similar to the later changes of Ranke's allergy 3. These changes are essentially the stage of endothelial phagocytosis and the stage of fibrous tissue proliferation. The fibrosis may be predominantly linear or miliary and nodular; often it is mixed. It is said to be progressive even after inhalation of the dust particles ceases, but the burden of proof rests with the proponents of this concept,[4] whose records show an extremely high incidence of supervening infections, particularly tuberculosis, so that death can hardly be ascribed to progressive silicosis. In the absence of further exposure to dust, simple silicosis may progress to a point characterized chiefly by a slight increase in the size of the nodular islands of fibrosis, with only slight aggravation of the resultant emphysema. Healing nodular tuberculosis, on the other hand, regresses; the nodules become smaller, sharper and often calci-

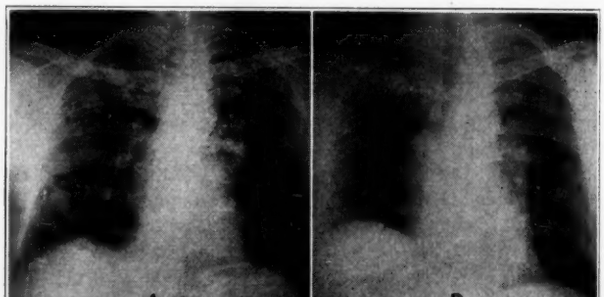


Fig. 1.—*A*, disseminated acinonodular tuberculosis in a patient 47 years old; Feb. 23, 1934. Tuberculosis was first diagnosed nine years before. When this roentgenogram was taken the patient was losing ground rapidly, with cough and hemoptysis prominent symptoms. After two months of conservative treatment in a sanatorium, a phrenicectomy was done on the right side because a cavity developed in the upper lobe and a pneumothorax could not be done. The cavity blocked shortly after phrenicectomy. Most of the widespread infiltrations in both lungs resolved or organized. *B*, the patient was clinically well when this roentgenogram was taken, March 26, 1938.

From Eagleville Sanatorium, Eagleville, Pa., and Millville Hospital, Millville, N. J.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.

1. Ranke, Karl Ernst: Primäraffekt, secundäre und tertiäre Stadien der Lungen tuberkulose, Deutsches Arch. f. klin. Med. **129:** 224 (June) 1919.

2. Neumann, Wilhelm: Die Klinik der Tuberkulose Erwachsener, ed. 2, Berlin, Julius Springer, 1930.

3. Loeschke, H.: Die hämatogenen Tuberkulosen, Beitr. z. Klin. d. Tuberk. **61**:171-183, 1932.

4. Britton, J. A., and Head, J. R.: Pneumoconiosis: The Delayed Development of Symptoms, J. A. M. A. **96:** 1938 (June 6) 1931. Lawson, G. B.; Jackson, W. P., and Gardner, J. E.: Pneumoconiosis in Iron Miners, J. A. M. A. **96:** 1129 (April 4) 1931. Watkins-Pitchford, W.: Silicosis in South African Gold Mines, J. Indust. Hyg. **9:** 109-139 (April) 1927.

fied, if not completely resorbed. Aggravation of the emphysema is theoretically the same as in silicosis. The ultimate degree of nodular fibrosis reached in silicosis is determined by the amount of retained silicious material. When this limit is reached there is a substantial degree of arrest if tuberculosis does not complicate the picture. Simson and Strachan [5] concluded that "a very considerable proportion escape this complication throughout." While our serial studies do

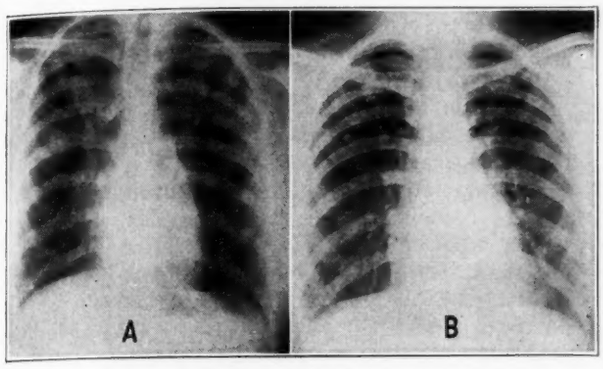


Fig. 2.—*A*, moderate fibro-ulcerative cavernous tuberculosis in the upper lobes of both lungs; April 2, 1930. In the greater circulation only the kidneys were suspected of involvement, because of a persistent faint trace of albumin for many months. With conservative treatment the processes in both lungs healed in about eight months, with fibrosis and calcification of the linear and nodular infiltrates. *B*, taken April 13, 1938, shows the irregularity in the size and distribution of the lesions.

not extend over so long a period, our observations strongly support this view.[6]

The South African investigators have long recognized a form of tuberculous complication which is like hematogenous tuberculosis in that there is a marked tendency to arrest of the disease. This tendency is particularly striking in cases of the fibrous and acinonodular forms, which so closely simulate silicosis itself in the roentgenogram. The condition in this large group of cases is designated by them "tuberculosilicosis" to distinguish it from the older, better understood "silicotuberculosis." While the lesions of the "infective," or "tuberculosilicotic," type may occur in nodular form, the nodules are characteristically irregular in size and outline. Sometimes large dense areas of massive fibrosis develop, but they hardly possess the appearance of classic unmodified silicosis or tuberculosis (fig. 3). These infective lesions can be recognized roentgenographically. Simson and Strachan [5] have shown that the inoculation of preparations from infective silicotic lesions which showed no positive evidence of tuberculosis to the naked eye or microscopically gave a majority of positive results for tuberculosis. This has led their bureau to classify under the term "silicosis of the infective type" those cases in which lesions of the character described are present but in which nevertheless the accepted local or general indications of active tuberculosis are not present. Such cases comprise a large distinctive, clinical and radiographic group.

TUBERCULOSILICOSIS

We have had ample opportunity to see the evolutionary hematogenous tuberculous changes in long serial studies at Eagleville Sanatorium, Eagleville, Pa. In the Millville Hospital, Millville, N. J., a large number of routine serial studies of men who work in the sand-pulverizing industries are in progress. Comparisons with the cases observed at the tuberculosis sanatorium were thus possible. These studies yield concepts of the pathogenesis and pathology of both diseases not readily reconstructed by the pathologist from postmortem studies. Chief reliance falls on the roentgenologist, not the pathologist, for establishing the diagnosis in symptomless cases of infective silicosis, or tuberculosilicosis. In the roentgenograms the number of scars, their type, their distribution and the secondary changes they produce can be studied. The most important factor in these changes is the length of the infective period.

The chief diagnostic stumbling blocks in building the picture of tuberculosilicosis have been the absence of evidence of tuberculous infection in postmortem examinations, the paucity or absence of clinical symptoms of tuberculosis during life and, most important (or at least the factor most stressed), the absence of tubercle bacilli in the sputum. Another difficulty is the fact that the course of the disease is chronic without the patient or the physician realizing the true cause of the mild symptom complex in the early stages. Only when erosion of a lesion into a vessel produces hemoptysis or development of a cavity results in cough and expectoration with toxic symptoms, in part probably ascribable to secondary infection, does the suspicion of tuberculosis develop. Even when the condition is diagnosed at this stage, there is often apparent arrest of the disease, especially if the provoking agent is no longer effectively operative. The residual scars of this phase of the disease do not resemble the later manifestations of simple silicosis or of the discrete miliary or nodular forms of hematogenous tuberculosis. The roentgen diagnosis is thus less difficult because the early linear scarring of initial silicosis is "added" to the previous scarring of tuberculosis. This may not be evident at first because the tuberculous fibrosis is so well organized and masked by the compensatory emphysema that its presence is not suspected, but there develops nevertheless a concentration of fibrosis in patchy areas, usually in the upper lobes. This ends in an asymmetrical distribution which is the telltale point of differentiation between simple silicosis and tuberculosis. The roentgenologist, then, and not the pathologist, can make a positive diagnosis, and he need not be deterred by the clinician who disagrees because typical physical signs are lacking or because the sputum is free of the tubercle bacillus. Auerbach's [7] disagreement with Beattie, Ickert and Gardner about the fibrotic nature of tuberculosis in

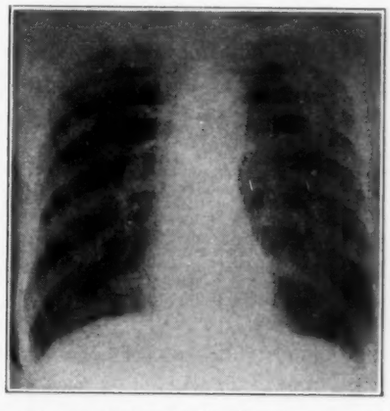


Fig. 3.—Tuberculosilicosis. A man aged 46 had tuberculosis when he was 19 years old, at which time he was sick nine months. He recovered completely and never had a recurrence. For several years he worked at an emery wheel, and shortly before roentgen examination he had hemoptysis. The slight cough and dyspnea he had had for two years were regarded by him as annoying but not otherwise significant. To change his occupation immediately and to treat him for tuberculosis was the course chosen by his physician.

5. Simson, F. W., and Strachan, A. S.: Silicosis and Tuberculosis, publication 36 (vol. 6), South African Institute of Medical Research, Johannesburg, Union of South Africa, 1935, p. 367; Report of Miners' Phthisis Medical Bureau for Three Years Ended 31st July, 1935, Pretoria, Union of South Africa, Government Printer, 1936, pp. 9-19.

6. Routine serial studies are made of employees in the sand-pulverizing industries of southern New Jersey under the direction of Dr. H. S. Branin of Millville, N. J.

7. Auerbach, Oscar: The Pathology of Pneumoconiosis, Quart. Bull., Sea View Hosp. **2**: 3-27 (Oct.) 1936.

silicosis in their postmortem studies might have been resolved if the pathologic changes noted in serial roentgen studies had been included in their observations. It is not always easy for the pathologist to construct his archeologic histologic picture at necropsy if he has not had roentgen data of the disease when the pathogenic tide ebbed toward healing with resolution, fibrosis and calcification. The clinician, in his field, may be led astray in his diagnosis because of the absence of toxic symptoms or deterioration in general health. He may not be able under these conditions to demonstrate the clinical counterparts of the pathologic changes; even areas of large consolidations in the upper lobes, and pleural thickening or other indications of latent or arrested infection are easily missed.

Simple silicosis, if progressive or intense enough, may lead eventually to chronic bronchitis and emphysema with heart failure on the right side. Since clinical hematogenous tuberculosis too may progress to a similar lethal ending it is not at all surprising that when the two conditions cross an augmented tendency to interstitial fibrosis ensues, no matter which is the more predominant or which came first. If silicosis predominates, a more rapidly developing bronchitis and emphysema

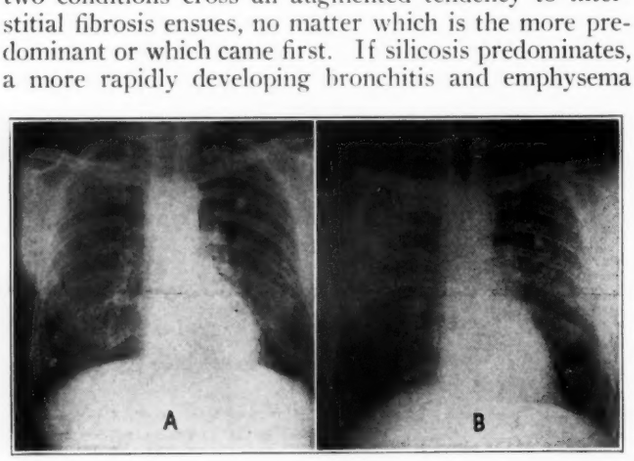


Fig. 4.—Tuberculosilicosis; *A*, Sept. 11, 1936, and *B*, April 23, 1938. The roentgen diagnosis was based on the irregularity of distribution and size of the acinonodular infiltrations and the diffuse hazy infiltration in the upper lobe of the right lung. A man aged 51, who worked for seven years as a screener in a sand-pulverizing plant, had "pneumonia" at 18 and influenza at 40. He had cough and expectoration, occasionally with hemoptysis, for eight months after the influenza. The roentgenograms suggest a possible tuberculous basis for these manifestations. While there have been only slight changes in the appearance of the lungs during two years of serial observations, withdrawal from further exposure to silica before the pathologic changes advance to the silicotuberculous form of the disease is highly recommended.

results; if tuberculosis predominates, the symptom complex of tertiary bronchopulmonary tuberculosis with intracanalicular extension results. Since tuberculosis is predominant and not sufficiently altered by the silicosis to be masked or difficult to diagnose, the condition is called silicotuberculosis. On the other hand, just as hematogenous tuberculosis may become arrested, so with limited exposure to silica the silicosis in a subject with hematogenous tuberculosis also may become limited. Then the interstitial fibrosis may appear to remain stationary although more extensive in the areas where the lesions of the two diseases exist together (fig. 4). In 89 per cent of 150 cases in this category, Simson and Strachan found no postmortem evidence of active tuberculosis. Even infective silicotic lesions of the massive type tend to be only slowly progressive, though they lead ultimately to a condition of active tuberculosis.

Asymmetrical distributions of linear and nodular fibrosis in persons with silicosis would therefore seem sufficient in themselves to establish the diagnosis of infective silicosis, with tuberculosis, in the vast majority of cases, labeled the etiologic infection. The term tuberculosilicosis is better reserved for this condition to distinguish it from silicotuberculosis, which might be used to designate the type in which tuberculosis is so predominant as to be diagnosed easily. This is so true that Watkins-Pitchford [4] believes that the pathologic process in almost all the cases of "simple silicosis" on the Rand is fundamentally the same as that of tuberculosis with silicosis: "The development of what appears to be a condition of simple silicosis, in these days, is probably a pathologically unique result of a tuberculous infection in a latently silicotic individual." The diagnosis of latent tuberculosis with silicosis is much more difficult, and the roentgenologist has done most to set forth the criteria. Our views are an extension of those commonly held on this subject and are in essential agreement with the points made by Pancoast and Pendergrass.[8] Their criteria for diagnosing tuberculosis in the presence of silicosis are (1) deviation of the trachea, (2) fibrosis at the periphery of the lungs, especially apical, and (3) marked thickening of the pleura. These are the changes that follow in the wake of organized tuberculous processes, especially those designated manifestations of "hematogenous tuberculosis." Our conclusions simply add further support, as well as a broader concept, to the diagnosis of this form of the disease. We recommend that this type of simultaneous infection be classified under a separate heading. This is in line with the recommendations of Pancoast and Pendergrass, who suggest dividing silicosis into types rather than into stages, as if silicosis were always of the same type. To designate this form tuberculosilicosis in accordance with the practice of the South African workers seems logical. Then the term silicotuberculosis might be reserved for the frankly tuberculous process associated with silicosis when the bacteriologic diagnosis of tuberculosis is positive. The practical significance of emphasis on these points of diagnosis is that the morbidity and mortality rates for silicosis might be materially improved if proper changes were made in the occupation of the silicotic person at this stage of his tuberculous infection. The well known aggravating influence progressive silicosis has on tuberculosis could thus be avoided. This would result in fewer cases of tuberculosilicosis becoming silicotuberculosis—the terminal form of the disease—and thus improve the management of employee compensation, an increasing problem in this field.

ABSTRACT OF DISCUSSION

DR. PHILIP J. HODES, Philadelphia: The most difficult problem of physicians interested in silicosis today is that of the pulmonary infections which complicate this disease, and tuberculosis is by far the most important. For years two types of tuberculosis, adult tuberculosis and childhood tuberculosis, have been recognized. Men familiar with silicosis have recognized a third type, silicotuberculosis, which has different characteristics. In discussing a fourth type, hematogenous tuberculosis, the authors have entered a controversial field. In carrying the problem of hematogenous tuberculosis into the field of silicosis, they are opening a new field, in which many physicians are

8. Pancoast, H. K., and Pendergrass, E. P.: Pneumoconiosis, New York, Paul B. Hoeber, Inc., 1926; The Roentgenological Aspects of Pneumoconiosis and Its Medicolegal Importance, J. Indust. Hyg. **15**: 117-135 (May) 1933; A Review of Pneumoconiosis, Am. J. Roentgenol. **26**: 556-610 (Oct.) 1931; Roentgenological Aspects of Simple Silicosis and Silicotuberculosis, Am. Rev. Tuberc. **29**: 43-60 (Jan.) 1934; Roentgen Classification of Pneumoconiosis, Based upon Roentgen Appearances, With and Without Coexisting Tuberculous Process, and Differential Diagnosis, J. Indust. Hyg. **16**: 327-345 (Nov.) 1934; Roentgenological Aspect of Pneumoconiosis and Its Differential Diagnosis, J. A. M. A. **101**: 587-591 (Aug. 19) 1933.

lost at present, but because of the importance of the problem it behooves us to investigate it along the lines suggested by them. At present it is difficult to reconcile ourselves to the thought that a disease as variable as tuberculosis can combine with a disease as variable as silicosis and still retain its identity well enough to be of prognostic value. I believe that repeated examinations are of paramount importance in determining the prognosis for patients with silicosis plus infection. The authors referred to cardiac disease due to silicosis. I have never seen cardiac damage which could be attributed directly to silicosis. The patients who died cardiac deaths invariably presented complications which were superimposed on their silicosis. I should like to ask what effect this type of tuberculosis has on the sedimentation rate in silicosis. Are the roentgen manifestations of hematogenous tuberculosis the same in industries with a silica hazard other than the sand-pulverizing industries? I should like to know whether syphilis influences the roentgen manifestations of this disease. In treating patients with silicotuberculosis, one might be tempted to induce artificial pulmonary collapse. Experience has taught that silicosis with infection does poorly after pneumothorax therapy. Silicosis, especially silicosis with infection, has been looked on as a progressively fatal disease. I agree with the authors as to the more optimistic outlook one may assume for silicosis with infection. The series of patients presented bears testimony to the good which can be done patients with this disease if they are properly handled.

DR. FREDERICK SLYFIELD, Seattle: In the first film that was shown, I should like to ask the authors whether they made a diagnosis of hematogenous tuberculosis—I mean before subsequent film added light on the subject—and, if so, how.

DR. PHILIP H. PIERSON, San Francisco: I have been interested in the diffuse miliary nodules seen in persons with tuberculosis, oftentimes not associated with clinical manifestations. I have thought that I could correlate them with sun bathing which was carried perhaps to the point of acquiring a heavy coat of pigmentation. I should like to know whether the authors feel that this may be a factor in this wide dissemination. I think from the minute distribution of these nodules that a bronchial artery spread, rather than a pulmonary artery spread, may be taken into consideration as a factor in these small nodules.

Dr. Marc Jaquerod of Leysin has published a book on the difference in appearance in bronchial artery spread and pulmonary artery spread, expressing the belief that there is a distinction between the two. Another explanation for these fine, discrete nodulations may be a reaction in the lymphoid tissue present in the branching of all bronchioles. This reaction might be similar in the roentgenogram to a hematogenous spread. I wondered whether the authors made a diagnosis of silicosis in that prenodular stage and whether one is safe in committing oneself to the view that the man has silicosis when the disease is only in this stage of increased linear marking.

DR. JACOB GERSHON-COHEN, Philadelphia: The roentgenologist may diagnose hematogenous pulmonary tuberculosis and silicosis by careful study of the distribution of fibrosis and calcification. If the fibrosis is more concentrated in isolated areas, especially in the upper lobes, this is sufficient evidence to justify suspecting a tuberculous infection complicating silicosis. In many forms of hematogenous tuberculosis the only roentgen change may be localization of linear or nodular fibrosis in the upper lobes, unassociated with toxic symptoms or tubercle bacilli in the sputum, and the same holds true if this kind of infection coexists with silicosis.

DR. LOUIS COHEN, Philadelphia: Hematogenous tuberculosis is being overlooked as a clinical chronic pulmonary entity in this country and not being overlooked in other countries, in spite of the fact that Dr. Hodes says the point is controversial; in Vienna one will see wards full of patients with what physicians call hematogenous tuberculosis; they prove the diagnosis at autopsy and treat the disease with old tuberculin because they feel it is in the blood stream and the problem consists in picking up the immunity of the patient. I don't think that any of the patients had syphilis, because all the patients at the sanatorium have routine Wassermann and Eagle tests. The sedimentation rates are up in all of them. I am glad Dr. Hodes brought up the question of failure of the right side of the heart because we are not convinced that tuberculosis or tuberculosis plus silicosis causes it. A great deal of work is being done along that line, and a great deal of argument has been raised pro and con. I believe the prognosis of silicosis is much less dangerous than one is given to believe. I believe the silicotic patient is dyspneic and emphysematous, and even with tuberculosis—if he has the benign hematogenous form and is picked up early and taken out of his industry—he can go along and do as well as any other man of his age. He may be dyspneic on climbing a hill or walking up steps. We diagnose all these hematogenous conditions first by the x-rays and second by the clinical symptoms. The patients are not all sick; they appear to be in a benign condition and may or may not cough or expectorate and have what looks like extensive symmetrical, evenly distributed advanced tuberculosis. I have now under my care four people for whom a diagnosis of hematogenous tuberculosis was made years ago, and they now have renal tuberculosis—four people with positive sputum and tubercle bacilli in the urine. I don't know anything about the effect of the sun's rays except that the group of physicians I work with are much against the use of ultraviolet therapy in active tuberculosis. I believe these hematogenous lesions are in the interstitial tissue of the lung and the lesser circulation.

THE MANAGEMENT OF TUBERCULOSIS OF THE CERVIX UTERI

A REPORT BASED ON 191 CASES, SIX CASES BEING REPORTED FOR THE FIRST TIME

DONALD C. COLLINS, M.D.

LOS ANGELES

Tuberculosis of the cervix uteri merits the serious consideration of the entire medical profession. It is significant that its gross appearance often closely resembles that of carcinoma. Tachezy [1] and Tommaselli [2] have both drawn attention to instances of tuberculosis and carcinoma existing in the same uterus. Only sixty-two articles on this subject were listed in the Index-Catalogue of the Library of the Surgeon General's Office, United States Army, up to the year 1914. In few recorded cases in the past has the condition been correctly diagnosed before the cervical lesion was studied under the microscope. Undoubtedly in many instances it has been lightly dismissed as representing far advanced cervical carcinoma with a consequent hopeless prognosis. This is unfortunate because many patients could have been restored to a full and useful life had proper treatment been instituted.

Counseller and I [3] presented a study on this subject in 1934. We added one new case and listed 108 other cases collected from the literature. This presentation is a continuation of that work. The eighty-two new examples mentioned here were not included in our previous report. This study is therefore based on a consideration of 191 instances of this disease. Forty-one new cases have been described since 1933 in the available literature at my command. Thirty-five additional cases have been found recorded prior to the

From the Surgical Pathology Laboratory, Los Angeles County General Hospital, and the Departments of Surgery and Pathology, College of Medical Evangelists.

Read before the Section on Obstetrics and Gynecology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.

1. Tachezy, Rudolf: Tuberculosis of Uterine Cervix, Casop. lék. cesk. **71**: 1531-1536 (Nov. 25) 1932.

2. Tommaselli, A.: Tubercolosi del collo e adenocarcinoma del corpo dell'utero associati. (Contributo clinico e anatomopatologico), Riv. chir. **1**: 233-241 (May) 1935.

3. Counseller, Virgil S., and Collins, Donald C.: Tuberculosis of the Cervix Uteri, Am. J. Obst. & Gynec. **30**: 830-840 (Dec.) 1935.

year 1934. Parrain,[4] in his graduation thesis on this subject at Paris in 1935, estimated that up to then 216 examples of secondarily contracted tuberculosis of the uterine cervix had been described together with

Fig. 1 (case 1).—Biopsy specimen from the cervix, showing typical Langhans giant cells and tubercle formation. Reduced from a photomicrograph with a magnification of 240 diameters.

forty-four instances of true primary infection. Since Parrain's [4] study, reports of thirty-four new cases have been found.

Lisfranc [5] is said to have been the first to identify tuberculosis of the cervix. In 1851 Geil [6] described this disease so well that little has been added in the ensuing eighty-seven years. Cohnheim [7] during 1879 showed that coitus with a tuberculous man could cause this condition. In 1883, one year after Koch's epochal discovery of the tubercle bacillus, Victor Babes [8] isolated the same organism from the vaginal secretions of a patient who was suffering from tuberculosis of the cervix uteri.

In America J. Whitridge Williams [9] in 1892 and John B. Murphy [10] in 1904 reviewed this entire subject and stabilized its treatment. Time and space do not permit the mention of many notable articles that have since appeared dealing with this condition. The recent contributions of Counseller and Collins,[3] Morillo-Una,[11] Finlaison,[12] Lester [13] and Danforth [14] are valuable additions to our knowledge of this disease.

Among 33,580 reported instances of female genital tuberculosis there were 133 (0.3961 per cent) of tuberculosis of the cervix uteri. Of these 133 cases thirteen (9.776 per cent) were undoubtedly instances of primary tuberculosis. In approximately 42 per cent of these cases there was associated active pulmonary tuberculosis. Williams [9] said that, in 0.16 per cent of women suffering from pulmonary tuberculosis, tuberculosis of the uterine cervix subsequently developed. In the histologic examination of 44,484 operative specimens reported in the literature there were only eleven (0.024728 per cent) proved instances of this disease.

Tuberculosis of the cervix uteri is, in approximately 85 per cent of cases, secondary to a tuberculous focus elsewhere in the body. Such primary foci may be found in the lungs or in either the gastrointestinal or the genito-urinary tract. Of the 185 cases which I have studied from the literature, in 156 (84.318 per cent) there was demonstrable tuberculosis elsewhere. In 102 cases (55.131 per cent) genito-urinary tuberculosis was present in either an active or a quiescent stage. Marriage and pregnancy are two common contributing etiologic factors. Tuberculosis of the female generative tract occurs most frequently in the fallopian tubes and progressively diminishes in frequency as it approaches the uterine cervix. It is believed that this disease usually results from a descending infection spread by contiguity from foci situated higher

Fig. 2 (case 2).—Biopsy specimen from the uterine cervix, showing typical Langhans giant cells and tubercle formation. Reduced from a photomicrograph with a magnification of 180 diameters.

4. Parrain, E.: Contribution to the Study of Primary Tuberculosis of the Cervix, Thesis, Paris, 1935.

5. Lisfranc, Jacques, quoted by Bonnet, Louis, and Bulliard Henri: La tuberculose du col de l'utérus, Gynéc. et obst. **24:** 97-125 (Aug.) 1931.

6. Geil, quoted by Williams.[9]

7. Cohnheim, Julius: Tuberculose vom Standpunkte der Infectionslehre, Leipzig, 1879; also quoted by Williams.[9]

8. Babes: Bacilles de la tuberculose dans une ulceration perinéale, dans la tuberculose du vagin, et dans une ulcération de la lèvre inférieure, Bull. Soc. anat. de Paris **58:** 341-344 (July) 1883.

9. Williams, J. Whitridge: Tuberculosis of the Female Generative Organs, Johns Hopkins Hosp. Rep. **3:** 85-152, 1892.

10. Murphy, John B.: Tuberculosis of the Female Genitalia and Peritoneum: Sections III and IV. Tuberculosis of the Portio Vaginalis and Cervical Canal, Am. J. Obst. **49:** 6-35 (Jan.) 1904.

11. Morillo-Una, L.: Tuberkulose des Gebärmutterhalses, Ztschr. f. Geburtsh. u. Gynäk. **110:** 166-209, 1935.

12. Finlaison, F. H.: Tuberculosis of the Cervix Uteri, with a Description of an Original Case, J. Obst. & Gynaec., Brit. Emp. **43:** 473-486 (June) 1936.

13. Lester, Charles W.: Tuberculosis of Uterine Cervix, Am. J. Surg. **33:** 574-580 (Sept.) 1936.

14. Danforth, William C.: Tuberculosis of the Cervix, Ann. Surg. **107:** 407-412 (Sept.) 1937.

in the pelvis or by hematogenous and lymphogenous routes from distant foci.

Primary tuberculosis of the uterine cervix is rare. In this series of 185 cases studied from the literature

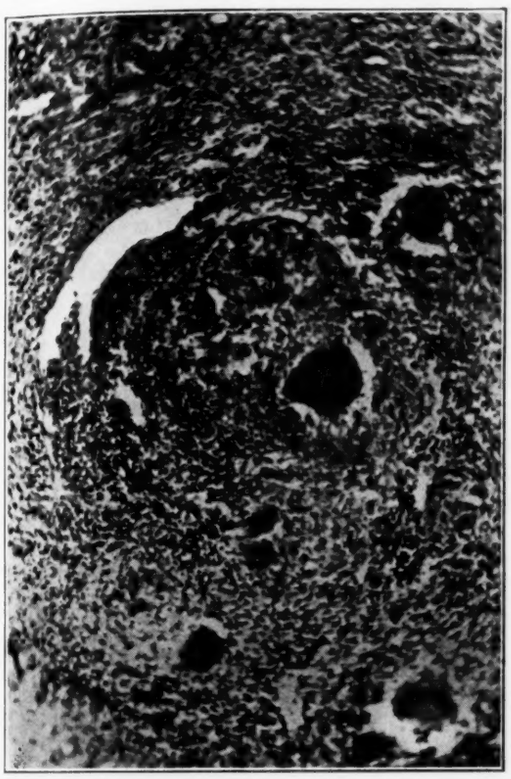


Fig. 3 (case 3).—Biopsy specimen from the cervix, showing numerous Langhans giant cells and tubercle formation. Reduced from a photomicrograph with a magnification of 240 diameters.

TABLE 1.—*Reported Incidence of Tuberculosis of the Cervix Uteri*

Author	Number of Cases	Source of the Material	Tuberculosis of Cervix, Cases	Percentage of Total Material
Berkeley (1903)	798	Postmortem examination.....	3	0.375
Schlimpert (1911)	3,514	Postmortem examination.....	3	0.085
Greenberg (1920-1924)	897	Cases of pelvic tuberculosis...	37	4.125
Davis (1932)	1,200	Surgically removed cervices...	1	0.083
Norris (1933)	15,130	Specimens from obstetric and gynecologic laboratory of the University of Pennsylvania	4	0.026
Diethelm and Ramsey (1935)	3,647	Gynecologic specimens from St. Vincent's Hospital, Toledo, Ohio (1927-1933)	1	0.027
Perroni (1935)	450	Cases of tuberculosis of the pelvis	12	2.664
Counseller and Collins (1935)	400,000	Surgical pathologic specimens (Mayo Clinic material)	1 (3—?)	0.00025—0.0010
Collins (1938)	84,000	Patients admitted to the Hollywood Hospital and the Presbyterian-Olmsted Memorial Hospital, Los Angeles, up to May 15, 1938	1	0.00119
Collins (1938)	72,000 610,000	Los Angeles County Hospital, general surgical-pathologic specimens; patients admitted up to May 15, 1938	5	0.00695 0.00082
Total cases.....			68	

there were sixteen proved instances of this type of primary infection. A true example of primary tuberculosis of the uterine cervix must fulfil the criterion of being the only focus of tuberculosis in that patient. Murphy [10] demonstrated that such a primary infection must usually be an ascending one derived from the outside and introduced into the vagina. Many authors have denied the possibility of this type of tuberculous disease. Wives of tuberculous husbands rarely have primary tuberculosis of the cervix. Cases are recorded in which the husband's disease caused either tuberculous salpingitis or endometritis with a normal intervening cervix.

Tuberculosis of the cervix uteri is classified into four types: the ulcerative, the papillary, the miliary and the rare bacillary catarrhal. Thus the gross appearance of the cervical lesion may vary widely. The typical lesion is usually ulcerated. The edges are either well defined or undermined and are surrounded by either tubercles or normal-appearing tissue. The adjacent portions of the vagina may be involved, and tubercles may be seen. Bishop [15] expressed the belief that a papular-polypoid lesion was the earliest discernible evidence in many of these cases. Such a lesion may later degenerate into a huge ulcer with ragged undermined edges. Sometimes the specific infection may be deeply situated in the endocervix and reveal little or no external sign of disease. Occasionally one sees a stenotic fibrosing lesion.

Secondary infections are commonly superimposed on these lesions. Varying degrees of bleeding or even severe hemorrhages with accompanying foul leukorrhea are frequently encountered. Microscopically, typical tubercle formation is not commonly seen. Often atypical tubercles composed of only epithelioid and

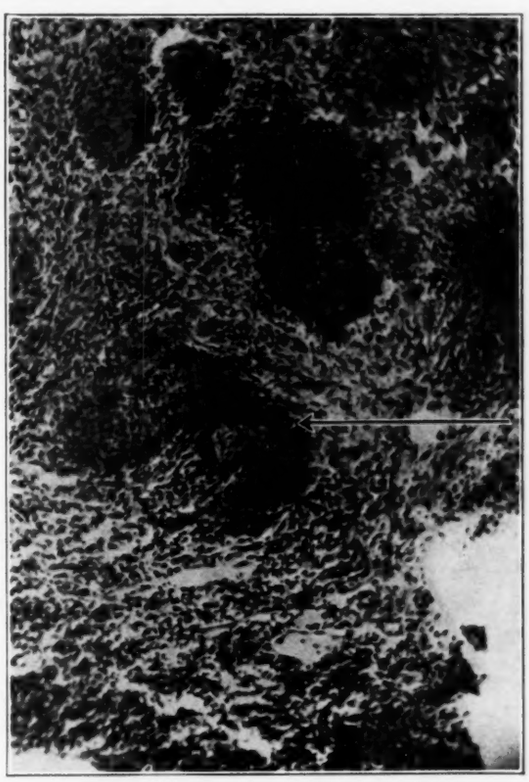


Fig. 4 (case 4).—Biopsy specimen from the cervix, showing a Langhans giant cell and incomplete tubercle formation. Reduced from a photomicrograph with a magnification of 180 diameters.

lymphocytic cells may be the only evidence on which a presumptive diagnosis of tuberculosis can be made. Acid-fast stains for the presence of the tubercle bacillus in either the microscopic section or the tissue smear may be apparently negative. Inoculation of guinea pigs may prove to be the only reliable method by which a

15. Bishop, Everett L.: Tuberculosis of Cervix, with Report of a Case, Am. J. Obst. & Gynec. **19**: 822-825 (June) 1930.

TABLE 2.—*Source of 185 Reported Cases of Tuberculosis of the Cervix Uteri*

Year	Author	Reference	Cases
1922	Thaler, H.	Zentralbl. f. Gynäk. **46**: 1354	1
	Herrmann	Zentralbl. f. Gynäk. **46**: 1862	1
	Hiess, V.	Zentralbl. f. Gynäk. **46**: 1863	3
	Latzko, W.	Zentralbl. f. Gynäk. **46**: 1864	4
1923	Vogel, W.	Zentralbl. f. Gynäk. **48**: 989	1
1924	Bianchi, G.	Morgagni **66**: 678	1
1925	Ellerbroek, N.	Zentralbl. f. Gynäk. **49**: 1579	1
1926	Weibel, W.	Zentralbl. f. Gynäk. **50**: 2571	1
1927	Bassanoff	Zentralbl. f. Gynäk. **54**: 2983	1
	Katz, A.	Zentralbl. f. Gynäk. **51**: 220	1
1928	Halter, G.	Zentralbl. f. Gynäk. **52**: 2613	1
1929	Gandolfo Herrera, R.	Rev. med. latino-am. **14**: 1468	1
	Gandolfo Herrera, R., and Ahumada	Bol. Soc. de obstet. y ginec., B.A., **8**: 165	2 (*1)
1930	Schiller, W.	Zentralbl. f. Gynäk. **54**: 2747	1
	Ennio, B.	Ann. di ostet. e ginec. **52**: 1120	1 (*1)
1931	Missett, J. V.	Am. J. Obst. & Gynec. **21**: 431	1 (*1)
	Ferry, G.	Bull. Soc. d'obst. et gynéc. **20**: 642	1
	Dworzak, H.	Zentralbl. f. Gynäk. **55**: 2030	2
	Ahumada, J. C.	Bol. Soc. de obstet. y ginec. **10**: 323	1
	Petridis, P. A.	Bull. Soc. d'obst. et gynéc. **20**: 700	1
1932	Fischetti, L.	Rassegna d'ostet. e ginec. **41**: 320	1 (*1)
	Tachezy, R.	Casop lék. cesk. **71**: 1531	2
1933	Riche, V., and Guibal, A.	Bull. Soc. d'obst. et gynéc. **22**: 595	1
	Rinesi, R., and Ferrazini, P.	Rev. med. d. Rosario. **23**: 886	1
	Moulonguet, P.	Gynec. et obst. **28**: 147	3
	Schmidt and Weibel, W.	Quoted by Moulonguet, P.	2
	Dupeux, B.	Gynecol. **32**: 595	1
	Favreau and Batteur	J. Obst. & Gynaec., Brit. Emp. **40**: 1270	1 (*†)
1934	Russolillo, M.	Arch. di ostet. e ginec. **41**: 14	1
	Nizza, M.	Boll. Soc. piemontese d. ostet. e ginec. **2**: 366	1
	Hauch, C. D.	Am. J. Obst. & Gynec. **28**: 276	1
	Veyrassat, J.	Presse méd. **42**: 1442	1 (*†)
1935	Morillo-Una, L.	Ztschr. f. Geburtsh. u. Gynäk. **110**: 166	7
	Carranza, F.	Neoplasmes **14**: 185	3
	Platareanu and Protogheropol	Rev. franç. de gynéc. et d'obst. **30**: 115	1
	Diethelm, M. W., and Ramsey, T. L.	Am. J. Obst. & Gynec. **30**: 420	1
	Tommaselli, A.	Riv. di chir. **1**: 233	1 (*†)
	Calegari, L.	Boll. d. Soc. med.-chir., Pavia. **49**: 1271	1
	d'Erchia, F.	Clin. ostet. **38**: 114	1
	Bortolozzi, M.	Pathologica **27**: 113	3 †
	Counseller, V. S., and Collins, D.	Am. J. Obst. & Gynec. **30**: 830	109 (*11,56)
1936	Krishnaswamy, K. G., et al.	Indian M. J. **71**: 254	5 (*3†)
	Finlaison, F. H.	J. Obst. & Gynaec., Brit. Emp. **43**: 473	1
	Szenwic, W.	Ginekologja polska. pp. 1116	1 (*†)
	Lin, S.	China M. J. **50**: 1025	1
	Lester, C. W.	Am. J. Surg. **33**: 574	1 (*†)
	Masciottra, R. L., and de Hoz, M.	Rev. med. quir. patol. **4**: 604	1
1937	Okinczyc, J.	Mem. Acad. de chir. **63**: 716	2
	Mitra, S.	Calcutta M. J. **32**: 332	1
	Figueroa casas, P., and Belizan	Semana med. **2**: 14	1 (*†)
	Danforth, W. C.	Ann. Surg. **107**: 407	1
	Totals		185 (*16,12†)

* True primary infections. † Questionable primary infections.

TABLE 3.—*Data on Six New Cases Reported in this Study*

Case		Age	Important Positive Findings	Tuberculous Foci Elsewhere	Type of Lesion	Treatment	Final End Result
1	4/9/29 to 5/12/29; O.P.D. 4/15/30	30	Mrs. J. R., Mexican housewife, secundipara, Wassermann negative, sick 1½ years; exploratory laparotomy 4/17/29 (patient of Dr. Wilburn Smith)	Tuberculous peritonitis and ascites; left tubal mass	Ulcer, large, involving entire cervix	Medical; surgery refused	Unknown, deported back to Mexico
2	3/18/30 to 3/25/30	24	Mrs. O. B. S., white, American housewife, secundipara, Wassermann 4 plus, sick 4 years (patient of Dr. H. C. Seaver)	None	Small polyp, posterior lip of cervix	Surgery refused	Unknown, left hospital against our advice; disappeared
3	5/25/31 to 6/6/31; 10/29/31 to 11/6/31	22	Mrs. E. A. M., Mexican housewife, nullipara, Wassermann negative, sick 1 year; 5/28/31, amputation of cervix, Sturmdorf method; 11/2/31, dilation and curettement for stenosis of the cervical canal; returned in March 1938 (patient of Dr. L. G. McNeile)	Tuberculous salpingitis; roentgenogram of chest negative; now, tuberculosis of bladder and kidneys	Ulcer, anterior lip; edges are friable; small; bled easily	Surgical; amputation of cervix 5 months later; dilation and curettement was done for a stenosis of the cervical canal	Well, until March 1938; now, suspected tuberculosis of the kidneys and bladder
4	8/21/36 to 9/8/36; reentered October 1937	55	Mrs. H. T., Mexican widow, septipara, Wassermann negative, sick 4 years; reentered in October 1937, very ill from progression of tuberculosis (patient of Dr. C. R. Howson)	Advanced bilateral tuberculosis of kidneys and lungs, with cavitation, and of larynx	Ulcer, small, anterior lip	Medical only; no surgery because of advanced general tuberculosis	Left against our advice; reentered in Oct. 1937 and died 10/30/37; postmortem was refused
5	O.P.D. 5/9/38	37	Mrs. L. A., Mexican housewife, nonipara, Wassermann doubtful, sick 6 months; treatment not started as all tests have not been completed (patient of Dr. Pence)	Suspected tuberculosis of bladder and tubes	Polypoid around external os; bled easily	None as yet; study not finished as yet	Still under treatment now
6	9/17/37 to 9/24/37	50	Mrs. M. D., Greek widow for 9 years, nullipara, sick 4 months (patient of Dr. T. H. McLaughlin)	None now; pleurisy in 1904	Polypoid, anterior lip, small, bled easily	Radium to lesion, 1,525 mg. hours in 8 days	Well so far; lesion has entirely healed

Additional follow-up notes to Jan. 17, 1939:

Case 3, 4/22/38: Removal of proved tuberculous left submandibular lymph node, which had acid fast bacilli on bacteriologic study. Last seen 7/15/38, when examination of cervix showed it to be well healed and negative.

Case 5, 5/11/38: Roentgenograms of the chest showed moderately advanced pulmonary tuberculosis; of the abdomen, old tuberculosis of lumbar vertebrae and of mesenteric lymph nodes. 5/18/38: Pelvic examination (by malignancy board): Cervix hard, nodular, but movable with distal third ulcerated, bleeding and painful. Pyosalpinx filled the culdesac. 6/3/38: Menstruating; asked to return one week later for consideration of possible panhysterectomy. Patient disappeared, left no forwarding address, and her present whereabouts were unknown on 1/17/39.

Case 6: Radiation therapy was applied to this patient against my advice. The cervical lesion recurred during September 1938. Since then it has steadily enlarged in size until now the entire cervix and vault of the vagina are deeply ulcerated. Urinary urgency, frequency and dysuria together with rectal tenesmus are quite marked. She has refused any surgical treatment (Christian scientist) despite our warning as to the probable unfavorable final result.

correct diagnosis can be established. Biopsy is a quick method of establishing a probable correct diagnosis. A competent pathologist should examine the biopsy specimen, which should be of sufficient size to include all the constituent cellular elements of the cervix in order to permit the making of a correct diagnosis. Removal of such a specimen will not injure the patient, while the issues at stake are of such gravity as to make

Fig. 5 (case 5).—Biopsy specimen from the uterine cervix, revealing many typical Langhans giant cells and partial tubercle formation. Reduced from a photomicrograph with a magnification of 240 diameters.

a correct diagnosis imperative. Syphilis may closely simulate this disease. Earlier medical literature on this subject is replete with reports in which biopsy was not done. Radical operations were performed for the eradication of a supposed carcinoma of the cervix, with a resultant increased operative mortality and morbidity —not to minimize the anxiety that such a false diagnosis caused the patient and her relatives.

Tuberculosis of the uterine cervix is important chiefly in cases in which little or no evidence of tuberculosis is discernible elsewhere in the body. The lesion is often accidentally discovered by the physician in examining the cervix. In a hundred ulcerated lesions of the cervix which grossly resemble a neoplasm the physician could correctly diagnose the lesion as being caused by a carcinoma in ninety-eight. The disease must be differentiated from lesions resulting from: hypertrophy of the cervix accompanied by eversion and erosion, myomatous or polypoid changes, gonorrhea, syphilis, actinomycosis, sarcoma and principally carcinoma. Adequate biopsy of the lesion should be of great value in the differential diagnosis if it is considered in conjunction with the history, the physical examination and the laboratory observations.

The treatment of tuberculosis of the uterine cervix should preferably be of a radical surgical character, such as abdominal panhysterectomy with the possible preservation of one ovary, if the patient's condition and other factors are favorable, because usually extensive tuberculous disease of the upper pelvic part of the generative tract is present and must be eradicated if cure is to result. For that reason and because of the rarity of a primary tuberculous infection of the cervix, local treatment of the cervical lesion is not advisable. For similar considerations roentgen and radium therapy will often prove to be disappointing in their end results. The contraindications to the employment of surgery are advanced local tuberculous lesions with extensive involvement of the neighboring bladder or rectum, extensive tuberculous salpingitis, marked secondary infection, the presence of active tuberculous foci elsewhere, cardiovascular disease and senility. The ultimate prognosis in this disease entity is dependent on the type of treatment employed and on whether active tuberculosis is present elsewhere in the body.

For brevity, tables have been used to condense and summarize the data of this study. Table 1 lists the recorded incidence of this disease according to various groupings of material.[16] Table 2 shows the source of tuberculosis of the cervix in 185 cases mentioned in

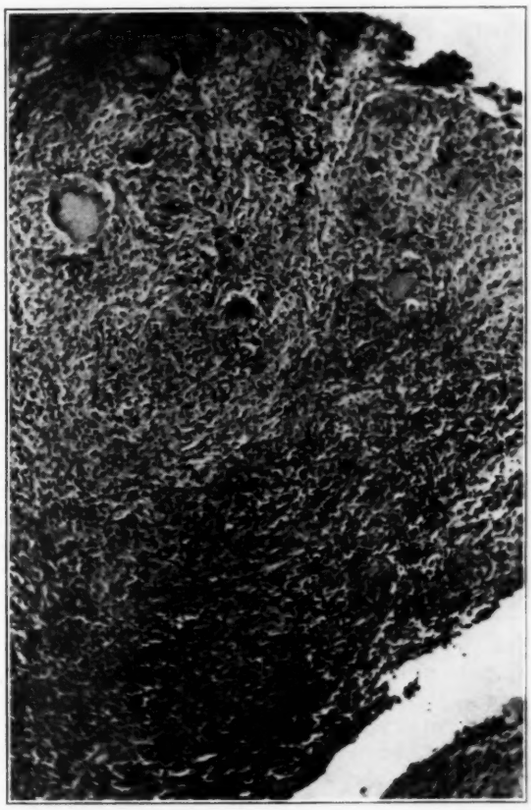


Fig. 6 (case 6).—Biopsy specimen from the uterine cervix, showing typical Langhans giant cells and tubercle formation. Reduced from a photomicrograph with a magnification of 240 diameters.

this report, classified as primary and secondary types. Table 3 depicts the important features in six new cases of this disease that are being reported in this paper

16. The data given in table 1 were obtained from the following sources: Berkeley, Comyns: Genital Tuberculosis in the Female, J. Obst. & Gynaec., Brit. Emp. **3:** 31-45 (Jan.) 1903.
Calegari, L.: Su di un case di tubercolosi del collo dell'utero, Boll. d. Soc. med.-chir., Pavia **49:** 1271-1284, 1935.
Davis, James E.: A Study of 1,200 Cervices, Including 589 Case Histories, 3,500 Microscopic Sections and the Gross Specimens of 1,200 Biopsies, Am. J. Surg. **17:** 32-38 (July) 1932.
Diethelm, Martin W., and Ramsey, Thomas L.: Tuberculous Endometritis, Am. J. Obst. & Gynec. **30:** 420-424 (Sept.) 1935.
Ferroni, quoted by Calegari.
Greenberg, J. P.: Tuberculous Salpingitis: A Clinical Study of 200 Cases, Johns Hopkins Hosp. Rep. **21:** 97-156, 1920-1924.
Norris, Charles C.: Obstetrics and Gynecology, Philadelphia and London, W. B. Saunders Company **2:** 568-572, 1933.
Schlimpert, Hans: Die Tuberkulose der Portio, Arch. f. Gynäk. **94:** 863-925 (No. 3) 1911.

for the first time. I believe that case 6 is possibly an example of primary tuberculosis of the cervix. Figure 7 depicts the gross appearance of the lesions in these six new cases.

1930 Wilshire Boulevard.

ABSTRACT OF DISCUSSION

DR. L. A. EMGE, San Francisco: When tuberculosis of the cervix is encountered six times within seven years at one institution, as reported by Dr. Collins, it is in order to call attention to it; however, only a few practitioners will ever encounter it in private practice. In the clinic at Stanford University School of Medicine my associates and I have observed only one case of proved primary tuberculosis of the cervix among about 700 cervices microscopically examined between 1912 and 1922. Since then we have examined microscopically 3,000 more cervical specimens without seeing another such example. Regardless of

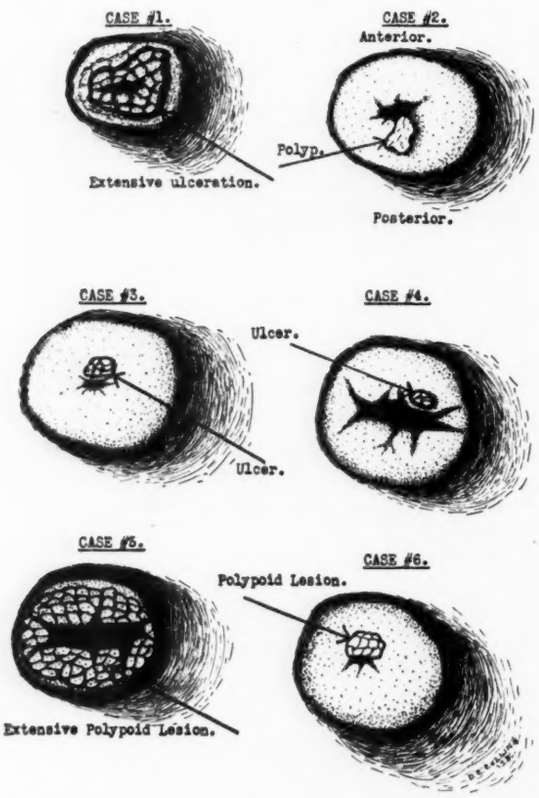


Fig. 7.—Gross appearance of the cervical lesions in this study.

the variations reported in its incidence, tuberculosis of the cervix is rare and I doubt that 0.16 per cent of all women suffering from pulmonary tuberculosis experience its development in the cervix, as quoted from Williams by Dr. Collins. Progress of the disease is slow and is not accompanied with rapidly progressive invasion typical of cancer. This in itself should attract attention. Furthermore, the evident resistance to conservative treatment certainly should create suspicion. Therefore I cannot share Dr. Collins's pessimism regarding the forgotten or mismanaged case. My acquaintance with a single case left the impression that the local discomfort is so constant and annoying that only a thoughtless practitioner would fail to provide means for an accurate diagnosis. Four patients in Dr. Collins's series were Mexicans. This raises the question of susceptibility of the different races to tuberculosis of the cervix. It is generally assumed that the cervix is resistant to this disease. Of thirty-eight cases of genital tuberculosis studied in our department, in eight there was involvement of the endometrium without extension to the cervix, and in only one, cervical involvement without extension to the fundus or other pelvic organs. Unfortunately there are no criteria to facilitate the clinical diagnosis of this disease except chronicity, and the physician must fall back on the time-honored principle of microscopic investigation of all unusual lesions or lesions that do not readily respond to treatment. This still is the best means of arriving at a prompt and accurate diagnosis. Surgical destruction still offers the greatest promise for cure; but whenever the disease is part of a more generalized abdominal or systemic tuberculosis, surgical destruction may do more harm than good. Whether cervical tuberculosis is primary or secondary is of purely academic interest and does not change the clinical management.

DR. HENRY SCHMITZ, Chicago: Among 1,170 cervices which were examined microscopically at the tumor clinic at the Cook County Hospital tuberculosis of the cervix was observed in three cases. The impression in each was of a descending infection, as there was a primary infection somewhere in the body. I wonder whether the radical surgical treatment of tuberculosis under these conditions is really safe, in view of the common knowledge of how easy it is to reactivate the primary tuberculous lesion. One patient was in poor condition and died from general tuberculosis. The other two were carefully and slowly treated with radium, and their cervices healed and never caused them any further difficulty. By this conservative attitude it was felt that in one of the cases, particularly, reactivation of the primary infection was avoided.

DR. DONALD C. COLLINS, Los Angeles: I shall follow the time-honored plan of using my five minutes to show slides of these tuberculous lesions, for which I did not have time earlier.

X-RAY DIFFRACTION ANALYSIS AS APPLIED IN PNEUMOCONIOSIS

HENRY C. SWEANY, M.D.
AND
ROSALIND KLAAS, PH.D.
CHICAGO

When attention became centered on silicon dioxide as the cause of fibrosis in silicosis, it was expected that a chemical analysis for the substance would establish the presence or absence of pathologic levels in tissues and body fluids. Work in this direction was carried out by King and his associates,[1] Fowweather,[2] Riddell,[3] Boehme[4] and McNally.[5] As with many similar situations in science, the results obtained by these workers did not measure up to expectations, for a positive correlation between the quantity of silica and the extent of pathologic changes was found not to exist in many instances. A chemical analysis gives only total silica, which may occur in the tissue as free silica or in the combined form of some silicate. If silicates are present to any great extent, a high value for silica will be obtained. If at the same time the amount of free silica is small, there may be little or no fibrosis, for silicates are apparently inert substances, asbestos being a notable exception. It is thus evident that a new approach to the problem was necessary in order to differentiate the harmful from the relatively harmless forms of silica.

The method of Clark and Reynolds,[6] which made use of x-ray diffraction analysis in the identification of quartz in mine dusts, seemed to offer possibilities of application in the field of tissue analysis. The method had been attempted by various workers, but not with

From the Research Laboratories of the Municipal Tuberculosis Sanitarium.
Read before the Section on Pathology and Physiology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

1. King, E. J.; Stantial, Helen, and Dolan, Margery: Biochem. J. **27**: 1002, 1933.
2. Fowweather, F. S.: Refractories J. **10**: 173, 1934.
3. Riddell, A. R.: Canad. Pub. Health J. **25**: 147 (March) 1934.
4. Boehme, A., and Kraut, H.: Arbeitsphysiol. **5**: 269 (March) 1932.
5. McNally, W. D.: Silicon Dioxide Content of Lungs in Health and Disease, J. A. M. A. **101**: 584 (Aug. 19) 1933.
6. Clark, G. L., and Reynolds, D. H.: Indust. & Engin. Chem., Anal. Ed. **8**: 36 (Jan. 15) 1936.

untreated dry tissue. Hicks, McElroy and Warga [7] studied the residue after trypsin digestion of the tissue, Sundius, Bygden and Bruce [8] after hydrogen peroxide digestion and Kahane and Antoine [9] after nitric, sulfuric and perchloric acid digestion.

When Dr. G. L. Clark offered the facilities of the x-ray laboratory at the University of Illinois, together

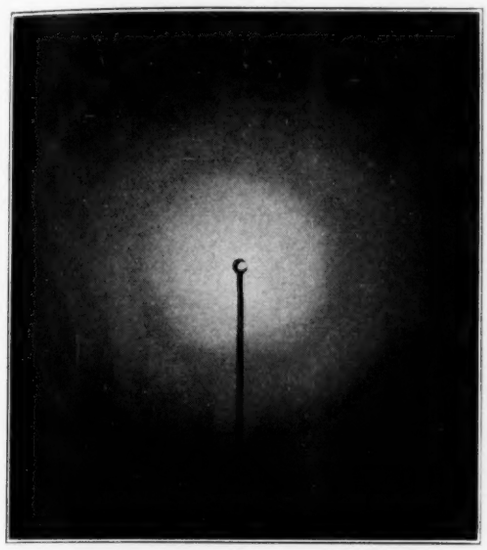


Fig. 1 (case 5).—Lung tissue of farmer with multiple calcifications; silica 0.63 per cent. No quartz.

with his cooperation and highly specialized technical assistance, a few representative samples of dried and powdered lungs which had already been analyzed for silica by a standard chemical method [10] were selected

Fig. 2.—Typical tuberculous calcification.

for study. The results appeared so promising that a preliminary report [11] was made in 1937, followed by a more complete report in 1938.[12] At the same time Jephcott, Gray and Irwin [13] were applying x-ray diffraction analysis to the ash of thirty-five specimens of lung. They identified quartz, feldspar and mica as the principal constituents. In the continuation of our work, a large number of samples of powdered lung tissue were subjected to analysis. The results obtained have been a confirmation of those given in the preliminary reports.

METHODS

Previous to the chemical analysis, the results of which have already been published,[10] the lung tissue had been hardened in a dilute solution of formaldehyde, dried in vacuo at 70 C., ground to pass a forty mesh sieve and dried further to constant weight at 105 to 110 C. For the x-ray study, thin samples were prepared by packing the powdered tissue into disks from 0.2 to 0.3 mm. in thickness. The x-ray beam, collimated by two 0.01 inch (0.025 cm.) pinholes, was supplied by a Philips Metalix tube with a copper target, operating at 20 milliamperes and 27 kilovolt peak. The film was

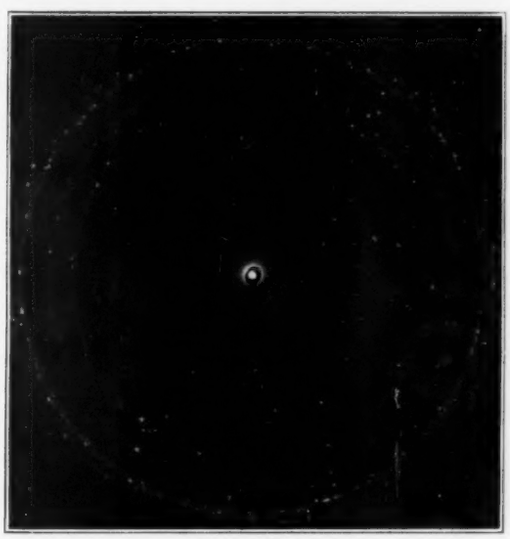


Fig. 3.—Apatite.

held in a flat holder at a distance of 5.0 cm. from the sample. The exposure time was usually seven hours. This length of time was made necessary by the use of very thin samples, but with this type of sample the pattern of the inorganic constituents was not masked by the effects of the large amount of organic material present.

RESULTS

The results of the x-ray diffraction studies are summarized in the table. The subjects have been divided into three groups, (A) those showing no pathologic evidence of silicosis, (B) those having silicosis and (C) those with borderline conditions, many of whom had some other form of pneumoconiosis.

The normal group included two infants, one having 0.09 per cent silica and the other 0.16 per cent. The x-ray pattern showed a broad halo about 3.6 cm. in diameter, with more or less scattering about the central spot. No sharp lines were present. The third patient was a 56 year old nurse (silica, 0.11 per cent). There were no quartz lines, but other crystalline substances were indicated. The fourth patient was a housewife who had died of tuberculosis. The silica content was 0.05 per cent; the pattern resembled that of the infants' lungs. The fifth patient was a 72 year old man who

7. Hicks, Victor; McElroy, Olive, and Warga, M. E.: J. Indust. Hyg. & Toxicol. **19:** 177 (April) 1937.
8. Sundius, N.; Bygden, A., and Bruce, T.: Tr. Ceramic Soc. **35:** 167 (April) 1936.
9. Kahane, Ernest, and Antoine, Georges: Bull. Soc. chim. biol. **18:** 1769 (Dec.) 1936.
10. Sweany, H. C.; Porsche, J. D., and Douglass, J. R.: Chemical and Pathologic Study of Pneumonoconiosis, with Special Emphasis on Silicosis and Silicotuberculosis, Arch. Path. **22:** 593 (Nov.) 1936.
11. Klass, Rosalind; Sweany, H. C.; Mrgudich, J. N., and Clark, G. L.: Science **86:** 544 (Dec. 10) 1937.
12. Sweany, H. C.; Klaas, Rosalind, and Clark, G. L.: Radiology **31:** 299 (Sept.) 1938.
13. Jephcott, C. M.; Gray, W. M., and Irwin, D. A.: Canad. M. A. J. **38:** 209 (March) 1938.

had farmed all his life. There was a surprisingly high content of silica, 0.63 per cent, although no silicosis was present. There were multiple disseminated calcified and ossified nodular tubercles throughout the lungs—several hundred in all. X-ray diffraction analysis showed no quartz lines. Instead, the pattern obtained (fig. 1) was similar to that of a typical tuberculous calcification (fig. 2) and to the pattern of

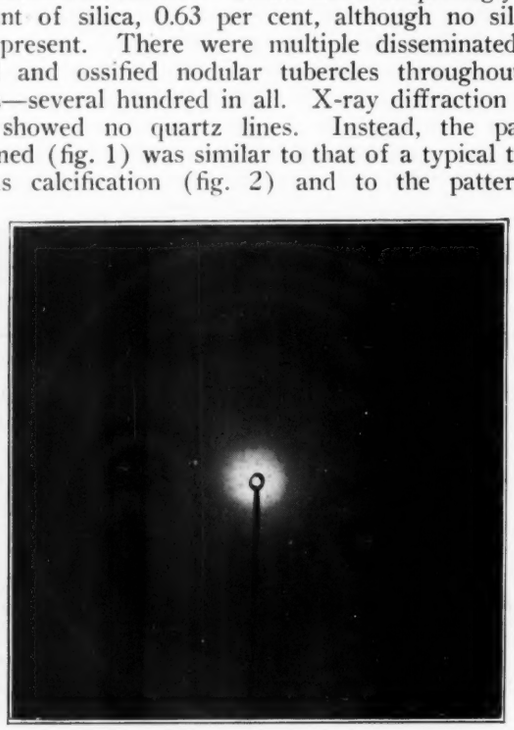


Fig. 4.—Powdered bone.

apatite (fig. 3). The similarity to the pattern of powdered bone (fig. 4) could also be noted.

All the specimens for group B, comprising patients with silicosis, showed the 3.34 angstrom unit spacing of quartz. The pattern of quartz (fig. 6) is included for comparison. As the concentration of quartz increases, the 4.25 angstrom unit spacing becomes visible. Both lines were strong in the pattern for patient 19 (fig. 7), a sand blaster exposed to dust for eight years. Chemical analysis showed 2.0 per cent silica, and pathologic examination revealed solid masses of fibrotic whorls without tuberculosis. Patient 11 is worthy of special mention:

A man aged 29 reported that he had worked in a cement factory at Ottawa, Ill., for six months. Silicosis was not suspected because cement dust is inert and because roentgenograms of his chest always showed a characteristic fibroid tuberculosis. At postmortem examination massive silicotic lymph nodes were found at the hilus of the lung together with many small nodules throughout the bases. Both upper lobes contained fibroid cavities. It was obvious that this man had been exposed to large quantities of silica in work that had not been mentioned in the history. Subsequently Dr. Roswell Pettit of Ottawa, Ill., consented to review this man's work record. After a diligent search he found that the patient had been a cement worker for eight months and that he had spent four months grinding silica for abrasives. This short and apparently heavy exposure was sufficient to give him silicosis, but the silica content of the dried lung tissue was only 0.26 per cent, a value only slightly higher than normal. The x-ray diffraction pattern showed a faint but definite quartz line (fig. 8). This case demonstrates clearly that an amount of quartz sufficient to produce fibrosis may be detected by x-ray diffraction analysis.

There were thirteen patients in group C, representing borderline conditions. Patient 20 was a machinist for seven years, but at death the pathologic picture was chiefly that of tuberculosis with a questionable silicotic taint. The chemical analysis revealed only 0.13 per cent silicon dioxide, a value well within normal limits. The x-ray diffraction pattern showed a distinct quartz line (the exposure time was fourteen hours, twice the usual time) together with the pattern of a tuberculous calcification. A boiler maker, a janitor, a molder and an engineering draftsman had no pathologic or chemical evidences of silicosis. None of them showed the presence of quartz in the diffraction pattern. Patient 24 was a soft coal miner for twenty years. The pathologic picture was that of typical anthracosis, although the silica content was 0.43 per cent. However, no quartz lines were present in the x-ray pattern; instead, the complex pattern of some silicate mineral was obtained (fig. 5). Patient 26 was a blacksmith and tool maker for thirty years. There were definite silicotic and anthracotic aspects to the extensive fibrocaseous tuberculosis. Microscopically these properties were all clearly demonstrated. The silica content was 0.22 per cent and there was a definite quartz line in the x-ray pattern. Patient 27 was a hoister in a lead and zinc mine, who died of tuberculosis without any demonstrable silicosis (silica, 0.24 per cent). The presence of quartz was faintly indicated in the x-ray pattern. The silicon dioxide content was just above the pathologic level, but as yet no silicosis had developed. Patient 32 was a lead and zinc miner who had worked for eight years in a mine where safety devices were used. There was gross tuberculosis, with only a slight suggestion of microscopic silicosis. There was a faint quartz line in the diffraction pattern. The other patients all showed some questionable aspect either in the history or in the pathologic picture; yet the chemical analysis revealed rather large amounts of silica. Except in patient 29 the diffraction patterns all showed the presence of quartz, although the exact amount remains to be determined.

COMMENT AND CONCLUSIONS

X-ray diffraction analysis is characterized first of all by its great specificity. Nearly all crystalline compounds give patterns distinctly different from all others.

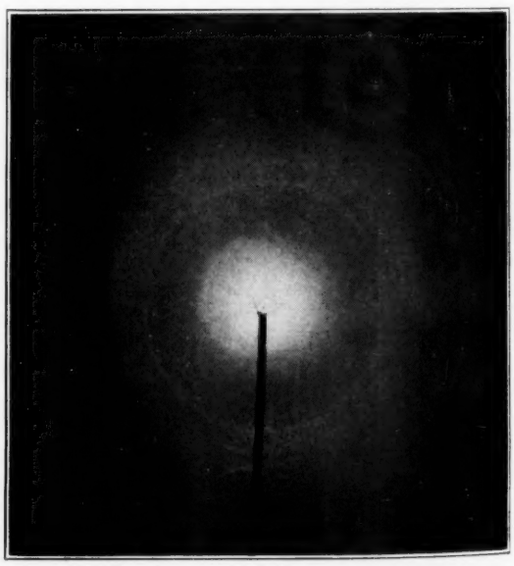


Fig. 5 (case 24).—Lung tissue of coal miner with anthracosis; silica 0.43 per cent; quartz absent.

Hence in a field where chemical methods are not available for identification of the type of silica present and where microscopic methods are inadequate for the study of mineral particles of the size encountered in tissue, the x-ray method gives definite information as to the identity of the crystalline substances present.

Furthermore, a comparison of the patterns with regard to the nature of the lines, i. e. whether they are smooth or dotted, indicates that there is a variation in size of particles from case to case. We conclude that in general the particles are 1 micron or less in diameter. Further work remains to be done on this aspect of the problem.

Another advantage of the x-ray method with the technic described is that the tissue can be used for the analysis unmodified by chemical treatment. Whenever the tissue is digested with some reagent one must make the questionable assumption that no changes take place in the mineral deposits. In our work such an assumption has been unnecessary.

A further significant feature is the great sensitivity of the method. With our present technic we are able to detect quartz in a concentration as low as 0.2 per cent. This concentration has been found in previous work to constitute the threshold of the pathologic level. Hence, the finding of a faint line on the x-ray film corresponding to the 3.34 angstrom unit spacing of quartz appears to be a good indication of the presence

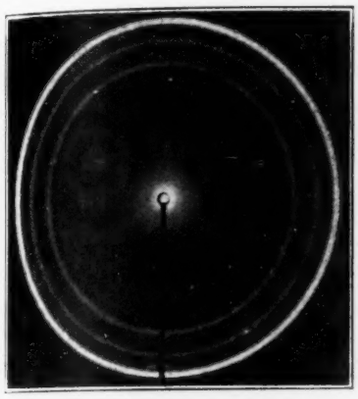


Fig. 6.—Quartz.

Fig. 7 (case 19).—Lung tissue of sand blaster with silicosis.

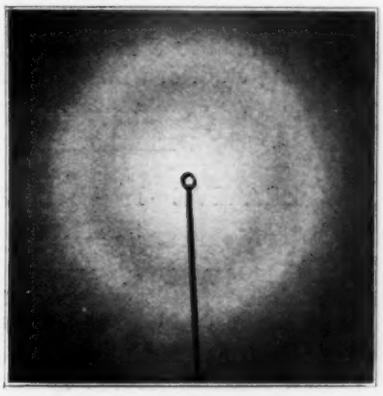


Fig. 8 (case 11).—Lung tissue of cement worker and abrasive grinder with silicotuberculosis; silica 0.26 per cent; quartz present.

Clinical and Pathologic Data and the Results of Chemical and X-Ray Diffraction Analysis on Dried Lung Tissue

Patient	Age, Years	Occupation	Period of Exposure, Years	Period After Exposure, Years	Gross Pathologic Condition	Microscopic Pathologic Condition	Silica in Dry Tissue, %	Result of X-Ray Analysis
					Group A, Controls			
1	1—	.....	..	..	Normal lung	.....	0.09	Quartz absent
2	1—	.....	..	..	Normal lung	.....	0.16	Quartz absent
3	56	Nurse	..	..	Normal lung	.....	0.11	Quartz absent; another crystalline substance present
4	46	Housewife	..	..	Fibrocaseous tuberculosis	.....	0.05	Quartz absent
5	72	Farmer	..	..	Multiple calcifications	.....	0.63	Quartz absent; pattern that of typical tuberculous calcification
					Group B, Patients with Silicosis			
6	35	Millstone sharpener	8.5	7	Silicosis	Silicosis	0.61	Quartz present
7	78	Miner	Many	17	Anthracosilicosis	Anthracosilicosis	0.94	Quartz present
8	39	Stone quarry worker	9	15	Silicotuberculosis	Silicotuberculosis	0.36	Quartz indicated
9	45	Rock miner	18	8	Silicotuberculosis	Silicotuberculosis	1.03	Quartz present; also other substances
10	54	Stone cutter	33	1	Silicotuberculosis	Silicotuberculosis	1.22	Quartz present; also other substances
11	29	Abrasive grinder	0.3	10	Silicotuberculosis	Silicotuberculosis	0.26	Quartz present
12	48	Stone cutter	19	4	Silicotuberculosis	Silicotuberculosis	2.46	Quartz present; also other substances
13	62	Lead and zinc miner	17	7	Silicotuberculosis	Silicotuberculosis	0.64	Quartz present
14	65	Lead and zinc miner	40	4	Silicotuberculosis	Silicotuberculosis	0.90	Quartz present
15	55	Lead and zinc miner	33	2	Silicotuberculosis	Silicotuberculosis	1.13	Quartz present
16	48	Lead and zinc miner	?	5	Silicotuberculosis	Silicotuberculosis	1.57	Quartz present
17	58	Lead and zinc miner	15	20	Anthracosilicotuberculosis	Anthracosilicotuberculosis	0.52	Quartz present
18	45	Coal and zinc miner	19	Several	Anthracosilicotuberculosis	Anthracosilicotuberculosis	1.12	Quartz present; also other substances
19	39	Sand blaster	8	0.5	Silicosis	Silicosis	2.00	Quartz present in large amount
					Group C, Patients with Borderline Disease			
20	27	Machinist	7	Many	Silicotuberculosis	Tuberculosis	0.13	Quartz present; pattern of tuberculous calcification indicated
21	60	Boiler maker in lead and zinc mines	?	Many	Anthracosis and carcinoma	Carcinoma	0.15	Quartz absent
22	64	Janitor	45	3	Bronchiectasis	Anthracosis	0.17	Quartz absent
23	59	Molder	Many	3	Emphysema	Emphysema	0.18	Quartz absent
24	45	Coal miner	20	5	Anthracosis	Anthracosis	0.43	Quartz absent; strong pattern, probably of a silicate mineral
25	56	Engineering draftsman	38	1	Silicotuberculosis	Tuberculosis	0.14	Quartz absent
26	57	Blacksmith, tool maker	30	1	Silicotuberculosis	Silicotuberculosis	0.22	Quartz present
27	56	Hoister in lead and zinc mines	16	18	Tuberculosis	Silicotuberculosis	0.24	Quartz indicated
28	41	Chef and copper miner	?	?	Fibrocaseous and fibrous tuberculosis	Silicotuberculosis	0.34	Quartz indicated
29	42	Molder in brass foundry	6	1	Tuberculosis	Silicotuberculosis	0.41	Quartz probably absent; other substances present
30	60	Molder	35	13	Tuberculosis	Silicotuberculosis	0.54	Quartz present
31	42	Foundry worker, coal miner	23	1	Tuberculosis	Silicotuberculosis	0.56	Quartz present; also other substances
32	27	Lead and zinc miner	8	1	Tuberculosis	Silicotuberculosis	0.20	Quartz indicated

of sufficient quartz to have already caused, or to be in the process of causing, specific fibrosis in the tissue. The method thus should be of value in medicolegal work whenever difficulty is experienced in determining the presence or absence of silicosis or a silicotic complication.

Finally the method seems to offer possibilities for further development. Clark and Reynolds [6] have made quantitative studies of the amounts of quartz in mine dust. Using a technic similar to theirs, we hope to be able to determine quantitatively, or at least semiquantitatively, the concentration of quartz in tissues. Work in this direction is now in progress. The application of the method to the detection of quartz in sputum is also being studied, with the expectation that a method of diagnostic significance may be developed.

OPERATIVE INJURY TO THE ANAL SPHINCTER

PAUL C. BLAISDELL, M.D.
PASADENA, CALIF.

Considerable confusion exists concerning the applied surgical anatomy of the sphincter mechanism of the anus as concerned with operative injury to it, with reference here particularly to that surgical trauma necessary to the cure of anal fistulas. What and where is it safe to cut? There are expressed such divergences of opinion and conception, so much patent misconception and so much lack of any conception as to warrant a review, together with a presentation of any additional information.

It is surprising to me how little attention has been called even to the fact of this confusion in proctologic literature, let alone to any attempts at elucidation. Probably the situation is in large measure explained by failure to recognize the full importance of the subject and its implications.

IMPORTANCE OF THE TOPIC

Cases of total postoperative incontinence are an obvious concern, and yet there is lack of appreciation of three important facts in connection with these common unforgivable tragedies, viz. that they are common, they are unforgivable and they are tragedies. The impressions obtained from descriptions that remedial plastic operations are easily accomplished is not true, for often it is difficult to secure a successful outcome.

More common are the cases of relative incontinence involving limited control, particularly regarding seepage of fluid or passage of gas. Social and business life may be thereby considerably restricted and the condition a daily burden, or at best a constant inconvenience. Not a little hesitation is encountered concerning rectal operations because of such cases among friends of prospective patients. The victims one meets—and they are by no means rare—have been rather firmly convinced by their surgeons that such sequelae are necessary and to be expected.

While it is true that in many cases relative and total incontinence are due to the vicious practice of postoperative packing, from my study they have been due in the majority of instances to injudicious surgical practice based on ignorance of the surgical anatomy of the region.

Even more important from the standpoint of actual numbers of patients involved, the same factor is responsible for a large part of the inordinately high rate of recurrence following operations for fistulas. That is, righteous fear of injury to the sphincter mechanism and unfamiliarity with the applied surgical anatomy in relation to fistulectomy too often occasion a choice between unguided radical surgical measures with resulting degrees of incontinence, on the one hand, and timid measures with avoidable recurrences, on the other. In ignorance of what and where it is safe to cut, one avoids incontinence only to stumble far too frequently into the pitfall of a high recurrence rate.

Much of the fault for these far too common and unwarranted errors must be laid at the door of the proctologist, for while each proctologist has learned by exceptional experience the practical surgical anatomy adequate for his own use, his written formulations, on which others must depend for guidance, have in many respects proved inadequate and conflicting.

REVIEW OF THE LITERATURE

As evidence of the confusion mentioned one can find expressed or implied the belief that usually none or but little of the external sphincter is involved in fistulectomy and, on the other hand, that the whole muscle or variable parts of it are concerned. Some authors have stated that fistulas may course "deep" to the internal sphincter, while others have not mentioned this possibility. Some have said that if the external sphincter is to be cut even partially the operation should be done in two stages and others that the entire muscle may be safely cut at one time or even a whole segment removed, and still others have expressed opinions between these two extremes. One can find the belief expressed or implied that it is equally safe (or dangerous) to cut the external sphincter anywhere in its circumference; that it is safe to cut posteriorly, but not elsewhere, or both posteriorly and anteriorly but not laterally; that cutting is only relatively safer posteriorly or that, owing to anomalies, posterior severance may on occasion be as disastrous as that undertaken elsewhere. One who believes that continence is chiefly dependent on the external sphincter can find support for his view in the literature, as can one who has the different impression that it is chiefly dependent on the internal sphincter, while recently the concept of the anorectal ring, a composite structure of parts of several muscles, as the guardian of continence has been developed. One

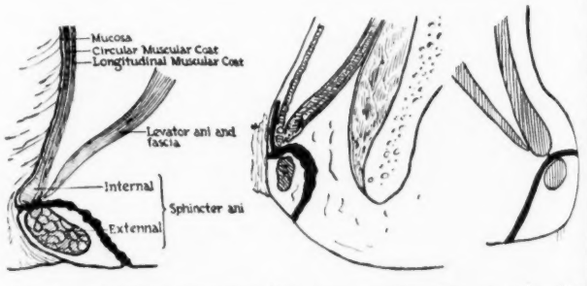


Fig. 1.—Schematic representations from the literature of anal anatomy and the relations of fistulas. They are common misconceptions, and from them may arise erroneous implications as to (1) the simplicity of the clinical recognition of the external sphincter and (2) the common relation of fistulas to this whole muscle. Compare with figure 3.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.

proctologist states that he has split the anal canal, including both sphincters and fibers of the levator, 600 times, while another counters that fistulas which necessitate such treatment are rarely seen, even in a large experience, and that if the whole sphincter mechanism were cut, even in stages, function would be definitely impaired. Postoperative packing rather than injudicious section is regarded by some as the essential element in the genesis of incontinence.

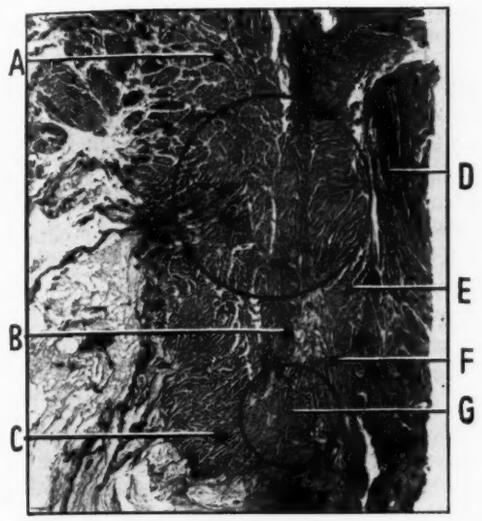


Fig. 2.—Paraffin section of the wall of the anal canal: *A*, levator ani muscle; *B*, longitudinal muscular coat of bowel; *C*, superficial and deep portions of the external sphincter; *D*, mucosa; *E*, internal sphincter; *F*, anal intermuscular septum; *G*, (small circle) subcutaneous portion of the external sphincter. The large circle represents the anorectal ring, including portions of the internal sphincter, the longitudinal muscular coat, the levator ani and the deep portion of the external sphincter. Notice (1) that only the subcutaneous portion of the external sphincter is below and in the same longitudinal plane with the internal sphincter, the other two portions surrounding the latter, (2) the prolongations of the longitudinal coat of the bowel coursing through and thus dividing the external sphincter, and (3) the continuity of structure between the levator ani and the deep portion of the external sphincter.

Possibly I have conferred undue importance on these differences, but from a critical analysis of fistula surgery in general it is obvious that something is lacking either in the facts available or in their adequate appreciation.

COMMENT

In almost none of the references, with the notable exception of the contribution of Milligan and Morgan [1] and an allusion by Hiller,[2] is there any discussion whatever or even a mention of the clinical recognition of the various component muscles mentioned. That is, amidst all these conflicting statements practically the only point on which there is apparently almost universal tacit agreement is the fundamental premise that the separate muscles can be easily, accurately and uniformly recognized at operation.

I am of the opinion that, far from being so simple as to merit almost alone its undebated position, this fundamental problem of clinical identification of muscles is responsible more than anything else for such divergent expressions. There exists gross error in this basic premise so universally taken for granted, in at least partial explanation for which I particularly point out here the inaccurate foundation of descriptive anatomy commonly illustrated, but not described, in textbooks (compare figure 1 with figures 2, 3 and 4). Such simple relations depicted between the muscles and the simple and constant relation between fistulas and muscles do not exist, and the resultant clinical misinterpretations and erroneous assumptions are obvious as sources of confusion.

For clear analysis in accordance with conditions as they actually exist I point out that there are only two possible means of differentiating and recognizing these muscles clinically, viz. by palpation and by sight (dissection).

Almost exclusive dependence must more often than not be placed on palpation, because operation involves commonly the limited exposure obtained with but a linear section, or little more, of the tissues. Thus this phase of the problem is of major importance.

I am in agreement with the recent observations of Milligan and Morgan as to what entities of the anal musculature can be recognized by palpation. For my purpose here these may be reduced to (1) the subcutaneous portion (only) of the external sphincter and (2) the anorectal ring (fig. 2), a composite structure composed of portions of the internal sphincter, the longitudinal muscle fibers of the wall of the bowel, the levator ani and the deep portion of the external sphincter. In other words, it is impossible to distinguish by palpation the external and internal sphincters as complete distinct entities; it is useless therefore to say, as far as palpation is concerned, what can or cannot be done surgically with safety in terms of these muscles individually.

What further help is afforded by the sense of sight in recognizing the different structures discussed, and is it sufficient to compel alteration of this concept?

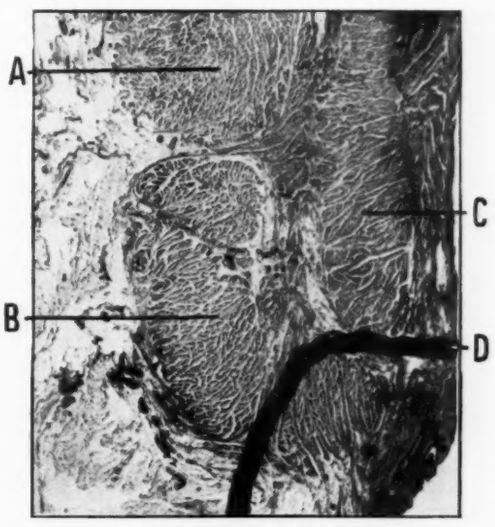


Fig. 3.—Paraffin section of the wall of the anal canal: *A*, levator ani muscle; *B*, external sphincter; *C*, internal sphincter; *D*, course of the fistula plotted as explained in the text, extending outward from the anal intermuscular septum and following one of the terminal prolongations of the longitudinal muscular coat through the external sphincter. The fistula involves here the subcutaneous portion of the external sphincter, the commonest arrangement. Occasional sections show, as here, and in contrast to figure 2, sharp demarcation between the levator ani and the external sphincter.

LABORATORY INVESTIGATION

Preliminary to answering this question I made numerous dissections in the autopsy room and studied gross and paraffin sections made in the laboratory. I

1. Milligan, E. T. C., and Morgan, C. N.: Surgical Anatomy of the Anal Canal, with Special Reference to Anorectal Fistulae, Lancet **2**: 1150 (Nov. 24) and 1213 (Dec. 1) 1934.
2. Hiller, Robert I.: The Anal Sphincter and the Pathogenesis of Anal Fissure and Fistula, Surg., Gynec. & Obst. **52**: 921 (May) 1931.

shall not pause here for details of these different approaches but report compositely only the following salient points:

It is impossible to define the internal sphincter as a clearcut anatomic entity because no upper border exists, the so-called internal sphincter being but the thickened lower border of the inner circular coat of the bowel. It would be comparable to determine where the handle of a baseball bat ends.

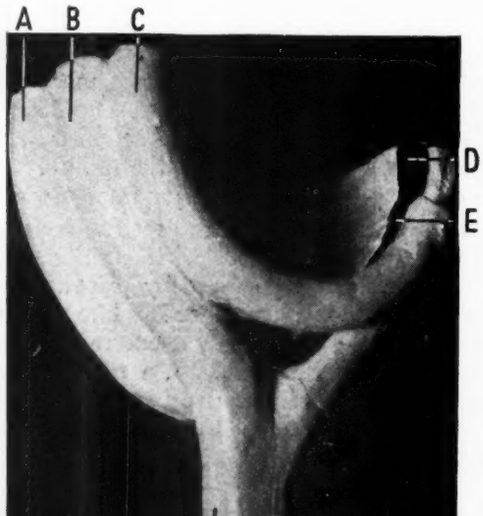


Fig. 4.—Model of anal anatomy reconstructed in accordance with paraffin sections and including conceptions of Milligan and Morgan: *A*, deep portion of the external sphincter; *B*, superficial portion of the external sphincter; *C*, subcutaneous portion of the external sphincter; *D*, lower border of the internal sphincter; *E*, region of anal intermuscular septum; *F*, attachment of superficial portion of the external sphincter to the coccyx. Just lateral to *D* a piece of the subcutaneous portion of the external sphincter has been chipped off to show how the superficial portion of the external sphincter surrounds the internal, only the subcutaneous portion being below and in the same longitudinal plane with the internal.

I have already referred to the complex relations of the external sphincter, as shown in the illustrations, and again call attention to their significance.

The external sphincter uniformly blends imperceptibly with the levator ani, and tearing of the muscle is usually necessary to separation (except of course anteriorly, where the latter does not surround the anus).

From the several approaches I gained the distinct impression that pus extension could readily separate the external sphincter from the (encircled) internal sphincter to the upper border of the former but that, instead of breaking through here between the external sphincter and levator and thus completely separating the external sphincter, extension would more easily follow the strands of the longitudinal muscular coat of the bowel which course through the external sphincter (figs. 2 and 3).

These facts from the laboratory not only corroborate the difficulties of palpation mentioned but also suggest difficulties in the accurate delineation of the muscles clinically even with the aid of dissection and sight, particularly, I repeat, with the little more than linear section warranted in most cases and with the interference of tissue planes due to inflammatory reaction and scar tissue. From them too one could with propriety question both the accuracy and the importance of discussions concerning operative trauma to the whole external sphincter because of the theoretically more ready involvement of but a variable part of that muscle.

I have not demonstrated to my satisfaction the separation between the superficial and deep portions of the external sphincter, as described by Milligan and Morgan, but this minor difference does not affect the usefulness of my concepts.

With this laboratory work as a background let me answer the question as to what of these structures I have been able to recognize clinically—and accurately.

CLINICAL OBSERVATIONS

In all my work with fistulas I have never found it necessary to identify the internal sphincter, nor am I certain that I could do so if I would, in the living human being, particularly in the presence of fistula scar tissue. As far as fistula surgery is concerned, reference to the internal sphincter as a clinical entity should be discontinued.

With cases involving wide dissection, such as those requiring plastic repair and a minority of fistulas more extensive or deeper than usual, I have delimited the external sphincter to my satisfaction. There are difficulties, however, such as accurately delineating it from the levator, as found in the autopsy room, but for the practical purposes of these operations I may say that the muscle can usually be defined. I emphasize, nevertheless, that considerable familiarity with the region may be necessary. Incidentally, my clinical experience bears out my theoretical deduction that involvement of the whole muscle is comparatively uncommon.

On the other hand, viewing as a whole the field of fistula surgery and considering the limitations of the dissection necessitated in the great majority of fistula operations and the difficulties imposed by erasure of tissue planes and the presence of scar tissue—all added

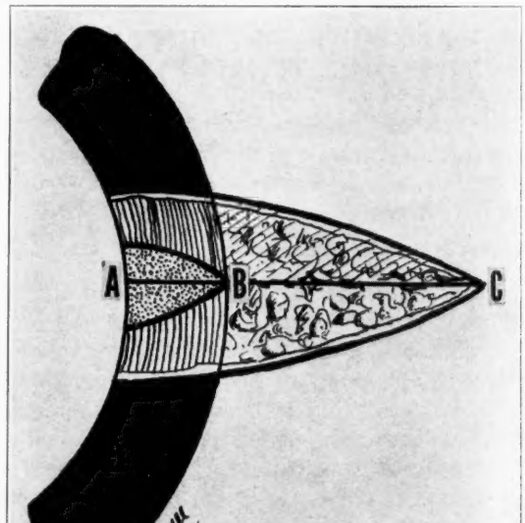


Fig. 5.—The comparative effects of removal of short and of more extended fistulas on retraction of the ends of the sphincter. If the fistula extended but through the muscle, *A* to *B*, or a little more, retraction would be limited as shown by the stippled area; if dissection included, on the other hand, such a distance as from *A* to *C*, retraction with its bearing on subsequent incontinence would be more wide, as indicated by the line-shaded area.

to the anatomic complexities reviewed—one finds that the amount of muscular involvement in terms commonly used has been largely a matter of only approximate knowledge even to the expert. Considering further that the specialist still observes probably but

a small percentage of these cases, taken the country over, I suspect that, were the truth known, operation is done in a large proportion with no knowledge at all as to what muscle tissue is severed.

I therefore reiterate the suggestion that the accepted concept of the surgical anatomy be rearranged to terms of (*a*) the subcutaneous portion of the external sphincter and (*b*) the anorectal ring; I believe this would obviate many of the difficulties outlined, from the standpoint both of the specialist and of the occasional operator. Recognition of these structures is simple of acquirement; its use is adequate for the purpose and particularly effective because by correct anal palpation (with the forefinger inside the anal canal opposed firmly to the thumb on the outside) one can both continuously follow tracts by their scar tissue and be constantly informed of their relations to the anatomic structures.

Let me consider the question from a different point of view, by plotting the known directions pursued by fistulous tracts in relation to the planes of the anal canal and outside skin. This approach is a common one and becomes possible and valuable because for all practical purposes the internal opening of fistulas may be regarded as occurring at a fixed and constant point at or near the anal intermuscular septum. From here the most common course through the musculature is at right angles to the anal canal and thence in a gentle curve to the skin. Plotting this recognized course on the common misconception of anal anatomy shown in figure 1, an almost universal representation in the literature, gave theoretical basis to the assumption that the whole external sphincter was usually involved in fistulectomy, an assumption too easily accepted because of the unrecognized difficulties of adequate clinical recognition of the muscle herewith detailed. Plotting the same course on the correct anatomic conception, shown in figure 3, would involve in fistulectomy only a part of the external sphincter, which corresponds with the theoretical deductions mentioned earlier. Thus portions of the external sphincter, particularly the subcutaneous portion, have probably been often mistaken for the whole muscle, and in its clinical assumptions and applications proctologists have not all been talking about the same thing. The implications are obvious and support my previous conclusions.

SUGGESTED RULES

Any formulation as to what is safe to cut should either make more accurate distinction as to severance in the different quadrants or, if in more general terms, provide adequate margin of safety to include all. It is not sufficient to say "Be a little more careful laterally than posteriorly." This too is the case in comparing short fistulas and those of wider extent, where more extensive dissection permits wider gaping of the severed ends of muscle (fig. 5).

Recognition of the devastating effects of postoperative packing is a sine qua non, and all dictums regarding operations for fistulas must assume an understanding of this principle.

Operative injury to the supportive framework of the anus outside the sphincters, injury to the nerve supply and atrophy of disuse are little discussed topics germane to my thesis which must forego consideration at this time.

While the main object of my paper has been to point out and analyze the basic elements of confusion in the literature, for the sake of completeness I suggest, without time for discussion, the following rules in conformity with the anatomic concepts developed:

1. It is always safe to cut once the subcutaneous portion of the external sphincter, in my opinion the portion most frequently involved.

2. It is never safe (and exceedingly rarely necessary) to cut entirely through the anorectal ring.

3. Amounts of muscle between that of the subcutaneous external sphincter and the anorectal ring can and should be cut by the two stage operation [3] (fig. 6).

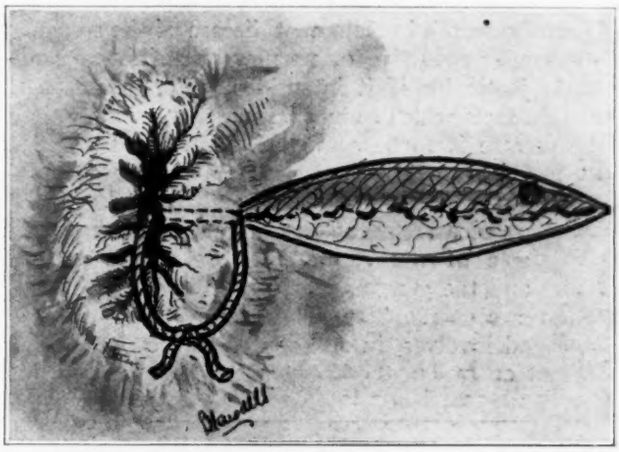


Fig. 6.—The principle of the two stage operation for rectal fistula. Dissection has been carried up to the sphincter musculature. Linen kordo is tied through the remaining portion, around the muscle tissue involved. After the lateral wound has healed, the remaining portion is severed, usually in the office during local anesthesia. Wide retraction of the ends of muscle is thus obviated, not only in accordance with the principles shown in figure 5 but because of the anchoring of the ends of muscle in scar tissue.

4. The attachment of the anus to the coccyx should not be severed at the primary operation.

There will be dissenting voices, but I hope at least to have provided herein a more accurate basis for future discerning discussion. I do not maintain that even considerable variance is not possible, but any deviation must be determined by the individual operator according to and commensurate with his increasing familiarity and experience.

ABSTRACT OF DISCUSSION

DR. MALCOLM R. HILL, Los Angeles: I had occasion to observe this study and see it from a laboratory angle. I did not realize how incomplete an understanding of applied surgical anatomy I have been carrying in my armamentarium. The work of Hiller in this field has definitely explained that posterior proctotomy is not safe in 100 per cent of cases because of anomalies or muscle defects. Milligan and Morgan's work, referred to by Dr. Blaisdell, is fundamental. This conception of muscle relations has been upheld by such anatomic works as those by Cunningham and Spalteholz, but it falls to the lot of a modern anatomist-surgeon and more recently to that of a practicing proctologist to uncover these hidden facts in applied surgical anatomy of the anal sphincter mechanism. Previous application in part by Dr. Blaisdell has given us a plausible explanation as to the cause of anal fissure. I refer to the published paper "Pathogenesis of Anal Fissure and Implications as to Treatment." Dr. Tom E. Smith mentions this work in his article on "Anal and Perianal Fissures and Ulcers," maintaining that that obstructing portion of the subcutaneous external sphincter be

3. Allen, J. Hall, and Haskell, Benjamin: A Two Stage Operation for Fistula-in-Ano, Surg., Gynec. & Obst. **58**: 651 (March) 1934.

called "Blaisdell's bar." I had the privilege of assisting in the operative amphitheater with the application of this conception of the surgical anatomy in cases of plastic repair following previous injury. It is valuable to proctology and surgery that Dr. Blaisdell should come to our rescue in thus scrapping the multiplicity of misinformed ideas and laying down certain fundamentals. We may thus be guided in dealing with complicated problems and be able to avoid injury to the anal sphincter mechanism.

MEDICAL ASPECT OF CANCER OF THE STOMACH

SARA M. JORDAN, M.D.
BOSTON

Clinical research in malignant disease of the stomach, even though productive of no new or striking conclusions, is justifiable if it intensifies the impressiveness of certain facts which cannot be sufficiently emphasized if the disease is to be combated. This study of 251 cases, in 187 of which the lesion was considered operable, was undertaken in this spirit and particularly with the purpose of arriving at certain conclusions concerning the role of the gastro-enterologist, the general internist and the general practitioner in the treatment of gastric cancer. The surgeon's function is well defined and involves, in addition to surgical technic in a difficult operation, the decision as to operability and

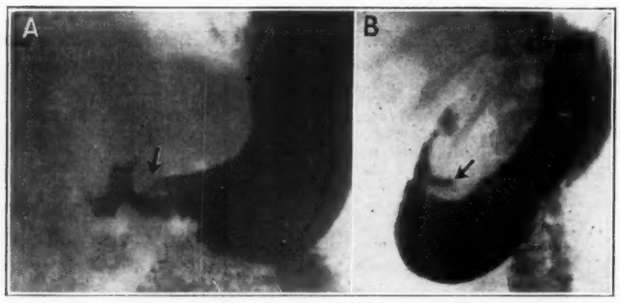


Fig. 1.—Prepyloric deformities suggestive of malignant disease but due to benign lesions: *A*, duodenal ulcer and prepyloric spasm. *B*, prepyloric ulcer and duodenal ulcer, proved benign by gastroscopic examination and clinical course.

extent of operability when the lesion is actually visualized and palpated at the operating table. In some cases the surgeon has the first opportunity to detect early cancer of the stomach when operating for another lesion or to suspect it in his clinical contacts with a patient. Most frequently, however, the early diagnosis falls within the scope of the gastro-enterologist and the general practitioner and constitutes their chief duty in the treatment of this disease, a duty of more vital importance than their second one, that of postoperative care. The facts that cancer of the digestive tract occurs most frequently in the stomach and that its onset there is most insidious, together with the frequent perplexities of early detection and the value of early operation, make the first possible diagnosis of this disease a challenge to the acumen and vigilance of the general practitioner and the gastro-enterologist.

The history of gastric carcinoma is often definite. The stomach can be clearly visualized by x-ray examination, the chemical data are diagnostically suggestive and the examining eye can now look at the lumen and mucosal lining with the gastroscope. There would therefore appear to be little justification for late diagnosis and the unhappy discovery of an inoperable lesion; but not infrequently, against the ideal of early diagnosis and early operation, certain conditions exist, chief among which are the apparent innocuousness of certain symptoms and an obscurity in the objective signs, particularly those of x-ray examination.

The first agendum of this study was to point out, not for the first time but in emphatic repetition, certain guiding signs which if followed might result in early diagnosis of gastric cancer. The questions asked and answered in part by these data concerned the role of the internist, for example:

1. In what type of patients does malignant disease of the stomach occur?
2. What are the earliest suggestive symptoms?
3. Are the diagnostic measures available today adequate for its early detection?
4. What good can be expected of early diagnosis and surgical intervention?

It is a usual medical mental procedure to suspect the ailing middle aged of cancer. The statistics of this series show that it should apply to gastric cancer, the largest number of patients, 68 per cent, being between 50 and 69 and almost equally divided between the 50's and the 60's. However, 19 per cent were in their 40's, 5 per cent were between 31 and 38 and 8 per cent were over 70. Sixty-three per cent were men and 37 per cent women in the group whose lesions were considered operable, while in the group whose lesions were considered immediately inoperable 77 per cent were men and 23 per cent women. This variation in the two groups suggested the possibility that women seek aid somewhat earlier than men.

Translated into an answer to the question as to what type of persons may be suspected of gastric carcinoma, these statistics contribute the conclusion that all persons over 30, men twice as frequently as women, should be suspected of cancer of the stomach when certain symptoms are found.

The next question, what are the earliest suggestive symptoms? was studied through the statistics of this series. In most histories of cancer of the stomach, two stages are described, one preceding the other by weeks or months. The second may involve a change in the character of the primary symptoms, such as an intensification or a change in the time of occurrence of pain, or there may be a completely new group of symptoms. These two stages have been called primary and secondary in this study.

The same symptoms are found in different incidences in the two stages. Pain or distress, usually epigastric but in some cases described as general abdominal and in a few cases entirely atypical, for example in the right upper or left upper quadrant or in the shoulders, occurred as the most frequent primary and secondary symptom. Loss of appetite and weight were the next most frequent primary symptoms and the third and fourth most common secondary symptoms. Nausea with vomiting was the second most frequent secondary symptom, and vomiting occurred as the fourth most frequent primary symptom. With lesions of the cardia, hiccups and dysphagia occurred in a few cases as the primary symptom, and in a few cases constipation

From the Department of Gastro-Enterology, Lahey Clinic.
Read before the Section on Gastro-Enterology and Proctology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.

or diarrhea alone was the primary symptom. Constipation was the fifth most frequent secondary symptom. The classic syndrome of loss of weight, appetite and strength thus maintains its importance as a strongly suggestive symptom of carcinoma of the stomach, but it is worthy of note that pain or distress, and in the secondary stage nausea and vomiting, were the commonest early symptoms. Since these are not insidious symptoms it should follow that, if they were properly evaluated by the patient and differentiated by the physician, earlier malignant gastric lesions would be discovered. Possibly a useful rule for patient and physician might be that in a patient over 35 abdominal discomfort of over a few days' duration should be checked and if persistent rechecked with careful study, both roentgenographic and chemical. In not a few of the cases in which pain was the predominant symptom, it was attributed without x-ray or other study to ulcer and was treated as such, sometimes with temporary relief of symptoms and therefore delay in the final diagnosis. This study also brought out the fact that the earliest symptoms, especially when they were fatigue or loss of weight and strength, were too often treated as due to anemia or nervous exhaustion. Liver or iron therapy, long vacations and trips around the world have sometimes been used as treatment when careful study should have been applied and reapplied. One of the lessons emphasized by this study was the value of rechecking, a procedure to which the public should be educated if cancer is to be diagnosed early.

TABLE 1.—*Symptoms Suggestive of Gastric Cancer*

Primary Symptoms	No. of Cases	Secondary Symptoms	No. of Cases
Pain or distress	106	Pain or distress	54
Loss of appetite	25	Nausea and vomiting	53
Loss of weight	22	Loss of appetite	43
Vomiting	17	Loss of weight	35
Loss of strength	15	Constipation	27
Belching and hiccups	8	Loss of strength	19
Dysphagia	5	Hemorrhage	10
Pallor	5	Pallor	
Nausea (no vomiting)	4	Regurgitation	
Diarrhea	3	Belching and hiccups	
Constipation	2	Palpable mass	8
		Diarrhea	7
		Dysphagia	7

To review, the two most frequent early symptoms of the disease are actually pain and nausea with vomiting, both of which are by no means insidious and are not diagnostic without differentiation. Loss of weight and appetite stood high in the list, the second most frequent primary and the third most frequent secondary symptom, and, though commonly recognized as the most important symptoms of cancer, were accepted by the patient and sometimes by the physician first consulted without adequate apprehension. A previous acute infection of the respiratory tract, a chronic prostatic or renal condition, and fatigue and worry were too often accepted as sufficient explanation. Two patients recently seen in the Lahey Clinic had previously been sent for a winter in Florida and a world cruise, respectively, because of symptoms of fatigue and loss of weight, when they actually had an early carcinoma of the stomach, the growth being diagnosed months later and too late for surgical removal. Another patient's loss of weight and failing strength had been explained by himself and his physician by his inability to chew his food because of a new artificial denture until he himself noticed an abdominal mass. Although neglect of symptoms as completely misleading as constipation, diarrhea or gaseous eructations is more to be condoned, this study emphasizes the importance of an examination of the entire digestive tract of the patient over 30 when any digestive symptom occurs.

The duration of symptoms before diagnosis was of considerable interest (table 2). In much the largest group, the patient came to the clinic either directly or very soon after his first consultation with his family physician, his symptoms having been tolerated by him without fear and without advice or because of that peculiar quirk of human mentality which causes man to fear to know that which is all the more fearful to know when he finally acknowledges it. The largest number of patients gave either six months or a year as the duration. Fifteen had had a long history of indigestion merging into the present symptoms, but it was a rather striking fact that in most cases the previous medical history was an unusually good one, the present illness being the first with many patients in their 50's or 60's.

TABLE 2.—*Duration of Symptoms Before Diagnosis*

Under 1 month	9	9-10 months	4
1-2 months	8	10-11 months	1
2-3 months	15	11-12 months	2
3-4 months	23	1 year	22
4-5 months	14	1-2 years	9
5-6 months	17	2-3 years	8
6-7 months	22	3-4 years	12
7-8 months	10	4-5 years	2
8-9 months	8		

The common finding of achlorhydria in the first examination is not devaluated by the fact that normal or high acidity occurred in thirty-two cases. There was achlorhydria in ninety cases, hypochlorhydria in twenty-nine cases, normal acidity in twenty-six cases and hyperchlorhydria in six cases. The presence of hydrochloric acid should make one no less suspicious, but its absence should increase suspicion. This is the only safe deduction from these statistics. Another important deduction made from a study of a few of these cases is that with a patient known to have chronic achlorhydria periodic check-ups of the stomach are indicated and certainly any new symptom requires study. Furthermore, a change from normal or high acidity to achlorhydria in a patient under treatment for gastric ulcer or with a history of a healed lesion, or even without previous gastric disease, should arouse suspicion.

TABLE 3.—*Amount of Weight Lost*

No loss	19 cases
1-10 pounds	17 cases
10-20 pounds	48 cases
20-30 pounds	49 cases
30-40 pounds	20 cases
40-50 pounds	12 cases
50-60 pounds	5 cases
60-70 pounds	1 case
Over 70 pounds (1 in 2 yr., 1 in 7 mo.)	2 cases

The amount of weight lost is indicated in table 3. One patient gained weight with ulcer treatment. The majority of patients had lost between 10 and 30 pounds before the diagnosis was made.

A palpable mass was noted in fifty-six cases. Resection was performed in twenty-nine of these (total in

three, exploratory laparotomy in seventeen, gastroenterostomy in nine and gastrostomy in one. Of the twenty-nine patients who had resections, five lived from one to two years (three had metastases at operation); one, who had a total resection, lived three and one-half years (metastases were present at operation); one lived eight years (no metastases were present at operation), and one has lived ten years (metastases were found at operation). These data add emphasis to the facts that a palpable mass is not a contraindication for surgical intervention and that small metastases are not a contraindication for resection.

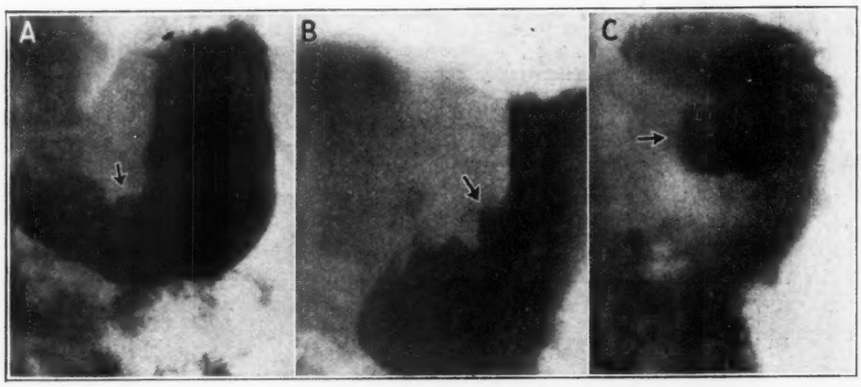


Fig. 2.—Benign lesions of the lesser curvature which might have been considered suggestive of malignant disease: in *A*, because of the meniscus surrounding the lesion and recurrence after subtotal gastrectomy, histologic examination indicating benign ulcer; in *B*, because of the irregular shape of the crater, disappearance of the crater during healing indicating a benign lesion, and in *C*, because of the size and irregularity of the crater, histologic examination after subtotal gastrectomy done for recurrence indicating a benign lesion.

X-ray examination has two purposes, diagnosis and location of the lesion and determination of operability. The modern technic of x-ray examination, particularly the recognition of the normal and abnormal mucosal pattern, determined by observing results with pressure palpation under the fluoroscope, and fixation of the picture with spot films, has been of great value in differentiating real from phantom lesions of the stomach and benign from the malignant lesions. The commonest phantom lesions simulating carcinoma are those caused by spasm, adhesions or loops of jejunum in close anatomic relationship to the pylorus. In spite of the medicinal and natural antispasmodics (such drugs as atropine and such natural measures as complete rest in bed and general relaxation), spasm of the two muscular apertures of the stomach, the cardia and pylorus, often persists to such a degree that visualization of the mucosal pattern in those areas and of the muscular activity and flexibility of the walls is impossible. This spasm has sometimes been found to be caused by disease elsewhere in the digestive tract or elsewhere in the body, as in a recent case in which autopsy showed that it was due to cardiac disease. Errors in diagnosis are then possible in either direction, ascribing the defect to spasm and not operating or ascribing it to cancer and operating uselessly.

Figures 1 to 4 are from cases in which differentiation between phantom or benign lesions and carcinoma had to be made, and figure 5 is from a case in which there was a ten year survival.

Endoscopic examination (esophagoscopic for the cardia and gastroscopic for the pylorus) is helpful and will be of more and more help in distinguishing spasm or other phantom lesions from organic lesions, except when the lesion is entirely submucosal. Then, however, careful fluoroscopic examination before and after relaxation management will usually distinguish adequately between phantom and actual lesions. In the occasional case exploratory operation must be done, and if a lesion is found at the pylorus it should be regarded as malignant and subtotal gastrectomy performed. In two cases of this series exploration was done because an annular constriction persisted in the prepyloric area in spite of trial management; no organic lesion or adhesions were found to explain the constriction, and, postoperatively, over a period of years, occasional check-up examinations revealed the same type of deformity, which without the historical background would have again caused suspicion of malignancy. Spasm and adhesions in the media from a healing or healed ulcer of the posterior wall may also cause unwarranted suspicion, especially if no observation was made at the time of visualization of the ulcer or its healing progress. The appearance of the lesser curvature niche has aroused considerable interest among gastro-enterologists, and the statement has often been made and usually confirmed that irregularity of outline, broad base, lack of smooth contour and the presence of a meniscus around the base indicate a malignant process. Exceptions to this observation occurred in this study, as figure 2 shows. Two patients of this series had had gastric ulcers which had been followed to healing several years previously. With one, opportunity was afforded by resection to find in the resected portion a carcinoma adjacent to the scar of the healed ulcer.

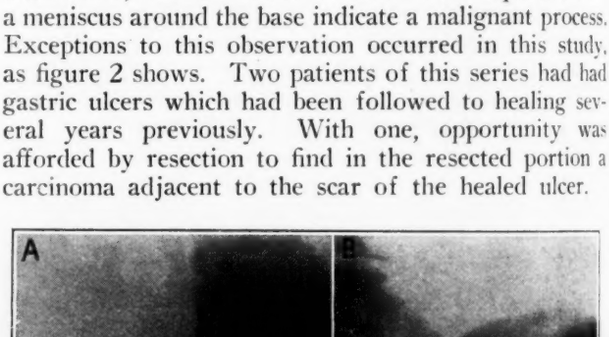


Fig. 3.—Prepyloric deformities with histories suggesting malignant disease; that shown in *A* was malignant, while with that shown in *B* there was no organic lesion. The patient represented by *A* was a man aged 63 who complained of vomiting, pain in the back (for seven months) and a loss of 9 pounds (4 Kg.) in weight. The operative diagnosis was a small annular adenocarcinoma at the pylorus. The patient represented by *B* was a man aged 40 with nausea and vomiting of eight months' duration and a loss of 30 pounds (13.6 Kg.) in weight. The diagnosis was pylorospasm and nicotine poisoning.

The location of gastric lesions has long been regarded as of paramount importance in distinguishing the malignant from the benign. Malignant lesions occurred in this series in the cardia and fundus in thirty-one cases, in the media in fifty-two cases and in the antrum and pylorus in ninety-eight cases. Benign ulcers likewise occur in all these parts of the stomach. The only loca-

tion in which an ulcerating lesion is always malignant is the greater curvature, at any level, when exclusively involved. The prepyloric area has in recent years had more careful examination both at operation and at autopsy, and constantly increasing evidence accumulates to demonstrate the healed ulcer at this site, thus freeing this area from the gloomy verdict of inevitable malig-

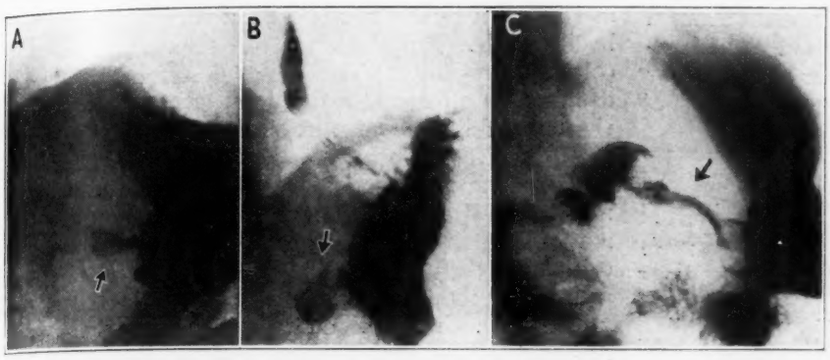


Fig. 4.—*A* and *B*, deformities of the antrum simulating neoplasm but produced by spasm following gastro-enterostomy. The patient represented by *B* had lost weight and strength for six months, with an increased suspicion of malignant disease, but the final diagnosis, made by gastroscopic examination and the clinical course, was gastritis and spasm produced by avitaminosis. *C*, a malignant process in the antrum in a gastro-enterostomized stomach.

nancy. The fact remains, however, that in this series in 35 per cent of the cases in which resection was performed the malignant lesion was in the prepyloric antrum. Furthermore, progress in healing of an ulcer is not as easily or distinctly followed at this area as when the niche protrudes from the lesser curvature, and whenever, after a short period of trial management, doubt persists as to the flexible integrity of the stomach wall at this point, whether or not occult blood continues to appear in the stools and symptoms continue to be evident, subtotal gastrectomy is to be chosen as an alternative to the harboring of an unhealed ulcer or a carcinoma. Benign ulcers at the cardia are rare, and most malignant lesions there are definitely irregular and rigid, their appearance leaving no doubt as to their malignancy. Furthermore, the rare benign ulcer in this area can be observed to heal or not to heal, especially with careful observation of the rugae, the conformation of which around the lesion helps to make the diagnosis. If the lesion is malignant, pressure, with a small amount of thick barium sulfate in the stomach, will reveal an irregularly distorted appearance of the rugae, which seem to disappear completely around the lesion, whereas with an ulcer the radiation of the rugae is more regular and intensified around the lesion.

The lesion of the media, if annular and constricting, may be a benign hourglass deformity of a healed ulcer or a malignant lesion infiltrating and constricting the stomach wall. Most of the latter type are clearcut rigid defects, but the very early ones simulate the innocent hourglass defects of ulcer healing and can be distinguished only by their lack of flexibility, as observed by careful fluoroscopic examination.

The niche of the lesser curvature, usually in the media, which, whether large or small, is so often the visualization of an ulcer, represents occasionally a malignant lesion. In the most confusing cases, the healing or nonhealing can be observed by the disappearance of the niche or its persistence, and, if it persists, resection is indicated because of actual or potential malignancy. The discrete, smoothly outlined tumor of the stomach, which from the x-ray examination might be considered a benign leiomyoma, should in my opinion never be allowed to remain thus diagnosed, since except by histologic examination it is impossible to distinguish it from a malignant lesion, notably leiomyosarcoma.

Gastroscopic examination is of considerable help and, with further knowledge of the various types of gastritis, promises to be of still greater help in revealing early carcinoma, especially the ulcerating type, the typical ulcer being clear-cut and having sharp edges and a grayish exudate at the base and the typical ulcerating carcinoma having ill defined edges and a distorting of the mucosal pattern for some distance around the ulcer. Although the posterior wall and the pylorus frequently cannot be seen in cases in which this visualization is most needed to rule out the presence of a malignant lesion, observation of asymmetrical peristalsis, confirming the results of the fluoroscopic observation, is valuable as an adjuvant diagnostic sign.

The answer to the question Are present day diagnostic criteria of sufficient aid in making the diagnosis of cancer of the stomach adequate? is Yes, if they are used with precision and are applied and reapplied with constant vigilance.

The final question, What good can be expected of early diagnosis and surgical intervention? must now be confronted in the light of the data from this series

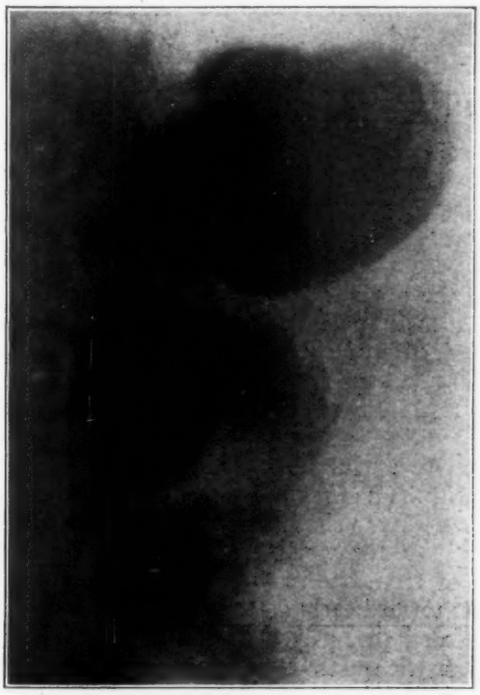


Fig. 5.—The stomach of a man aged 63 who had survived for ten years cancer of the stomach with metastases to lymph nodes. In 1928 he had a six month history of epigastric distress and loss of weight (20 pounds; 9 Kg.). Subtotal gastrectomy was performed, and the diagnosis was carcinoma of the pyloric end of the stomach with metastases to lymph nodes. In 1938 he was well and working, though he required treatment for primary anemia.

(tables 4 and 5). If consideration of this matter is initiated with a reflection that gastric cancer is a grim disease and that survival of even a small group of patients for a year or more beyond the natural course of

the disease is a relatively successful result, detection and removal of the lesion is worth while. If the first recognition of trouble on the part of the patient could be synchronized to the actual beginning of the neoplasm, detection and removal would be decidedly more worth while. At present, detection appears to depend on the natural sensitivity of the patient to internal disturbance, the rapidity of growth of the lesion, the patient's mental attitude toward summoning help, and the acumen and thoroughness of his medical consultant. The location of the lesion and its nature, whether ulcerating or

TABLE 4.—*Type of Operation*

Location of Lesion	Total Lesions	Resection		Exploratory Laparotomy	Gastro-Enterostomy	Gastrostomy
		Subtotal	Total			
	188	103	7	49	17	11
Cardia and fundus	31	3	2	15	..	11
Media	52	28	2 (media and fundus)	21	1	..
Antrum	56	38	..	8	10	..
Prepyloric antrum	39	28	..	5	6	..
Most of stomach involved	10	6	3	1	..	..

infiltrating, probably have considerable influence on the time relationship of the first symptom, but in this series no definite relationship could be established between location of the lesion and its early recognition. If obstruction at the cardia or pylorus occurs or an ulceration in the part of the stomach most involved in motility, the patient has an earlier consciousness of something wrong than if a part of the stomach less vitally concerned with its mechanics is involved, such as the posterior or anterior wall.

The statistics studied here show, unfortunately, no definite relationship of duration of symptoms and diagnosis of lesion to successful outcome, some of the patients who reported their symptoms earliest having died postoperatively after exploration only or removal of very advanced lesions. This fact would seem to frustrate the purpose of this study, which was intended to emphasize the importance of early diagnosis, but to offset the obvious inconsistency, it must be remembered that many potentially good results were thwarted by the necessity of submitting a patient in poor condition to a radical surgical procedure, whereas if the same patients could have had resection when they were in better condition, a large number would undoubtedly have survived. Furthermore, in the case of gastric cancer, with its natural 100 per cent mortality, even one patient in 187 who shows a ten year survival, with complete capacity for work, and several patients with a survival of from one to three years make worth while all efforts toward early detection and treatment.

The second part played by the internist in the treatment of gastric cancer is the management of the patient after resection. The late postoperative care of the subtotally or totally gastrectomized patient consists of encouragement during a long convalescence, practical aid in diet, maintenance of good colonic function, upkeep of nutrition and prevention of anemia. Convalescence is usually more protracted than after most surgical procedures, and this fact, together with the suspicion or knowledge by the patient that his lesion was malignant, usually makes psychotherapy, at least of the casual type, a real necessity. The diet is best arranged in five small meals in order to avoid overdistention of the jejunum. The anastomosed loop of jejunum is found by fluoroscopic examination to distend moderately without discomfort to the patient and in the totally gastrectomized patient sometimes takes on the appearance of a small stomach. Overdistention, however, produces discomfort and sitophobia. The five meals should consist of the most easily digestible foods and be equal in size and of correct variety to supply all bodily needs. It is important to establish and maintain colonic tranquillity. The commonest form of colonic dysfunction after subtotal or total gastrectomy is diarrhea, and this is often controlled by the use of hydrochloric acid. Constipation is best treated by diet and the use of small rectal injections of oil or saline solution rather than by oral medication, as irritation of the colon may result in symptoms difficult to control and to explain to the apprehensive patient. Nutrition of the partially or totally gastrectomized patient is often maintained only with great difficulty, a fact which usually has no relationship to the nature of the disease, for it is equally true, according to my experience, after gastrectomy for ulcer. A woman in this series who had had total gastrectomy for carcinoma of the fundus had subsequent vomiting and substernal pain due to spasm at the anastomosis of the esophagus and jejunum, which was relieved by dilation of the esophagus, with resultant improvement in nutrition. Secondary anemia is a common sequela of the original disease and the operation and in most cases must be constantly combated. Anemia of the primary type requiring liver therapy occurred in a few cases of this series.

SUMMARY

1. One should suspect cancer of the stomach in any patient over 30 complaining of any digestive symptom, but especially abdominal distress or loss of appetite and weight.

2. One should not send a tired middle-aged patient away for a rest or long holiday, even though his fatigue is adequately explained by circumstances, without examining and reexamining him for cancer of the stomach, and one should not treat the "run down" middle-aged patient for anemia without a thorough study of his digestive tract.

3. One should follow the known achlorhydric patient and the patient with a known healed gastric ulcer with regular check-up examinations to be certain that no gastric malignant growth has occurred.

4. One should educate the patient to the idea of early and repeated examinations if unexplained symptoms persist.

TABLE 5.—*Results of Resection (103 Cases*)*

Patient died immediately after operation	31
Patient lived after operation, now dead (2 mo., 2; 4 mo., 1†; 5 mo., 3; 6 mo., 1; 8 mo., 2; 1 yr., 1; 1-2 yr., 13; 2-3 yr., 8; 3-4 yr., 2; 4-5 yr., 3; 6-7 yr., 2; 7-8 yr., 2; 10 yr., 1)	41 cases
Patient lived after operation, may be living now (3 mo., 1; 4 mo., 2; 7 mo., 1; 8 mo., 1; 9 mo., 2; 1-2 yr., 3; 2-3 yr., 3; 3-4 yr., 3; 5-6 yr., 1; 7-8 yr., 1)	18 cases
Patient lived after operation, now living (3 mo., 1; 6 mo., 1; 8 mo., 2; 1-2 yr., 1; 2-3 yr., 1; 4-5 yr., 2; 10 yr., 1)	9 cases

* No postoperative report in 4 cases.
† Died of coronary disease.

5. In spite of well grounded pessimism regarding the average results in the present day treatment of gastric malignancy, one should regard each patient as an individual for whom the earliest possible diagnosis may result in the longest possible survival.

ABSTRACT OF DISCUSSION

DR. FELIX CUNHA, San Francisco: With what Dr. Jordan has presented here I am entirely in accord. The emphasizing of the early diagnosis of carcinoma of the stomach is, of course, continuous and insistent and incessant, and that is as it should be. Recently at the University of California there was a one week intensive seminar in gastrointestinal disease and forty-five physicians from the Pacific Coast showed enough interest to attend. Each day attention to early diagnosis of carcinoma was stressed in one way or another. I haven't any doubt that a patient falling into the hands of any of those men would stand a good chance so far as diagnosis of early carcinoma of the stomach is concerned. Gastro-enterologists must find a way to take a message to the physician who either lacks physical equipment to make diagnoses or practices medicine by trial and error. We have to take it to the man who is either temperamentally and intellectually unfit—I mean by that, either lazy or ignorant. He is the man who neglects the time element in arriving at a diagnosis. He diagnoses "indigestion," gives an alkaline powder and tells the patient to come back. The patient comes back unrelieved, and he gives him a different alkaline powder, and it is that interval of delay which seals the patient's fate so far as early diagnosis is concerned.

DR. GEORGE M. UNDERWOOD, Dallas, Texas: As I read only a few months ago some reports from Guy's Hospital which came out more than a year ago, it occurred to me that it might be interesting to this section to quote from them briefly at present in connection with this paper. In 1929 Dr. A. F. Hurst suggested that chronic atrophic gastritis might predispose to carcinoma of the stomach. In America I think not a great many physicians thought much of the idea. I shall go back to the reports, which came out in 1936. The research commission from Guy's Hospital investigated a group of patients in the same economic class for oral sepsis, rapid eating, the eating of highly spiced food, the eating of very hot food and excessive smoking. Now, bearing in mind that the incidence of carcinoma of the stomach in the Netherlands is practically three times that in England, whereas the incidence of carcinoma in general is the same in the two countries, these things were found: oral sepsis is one and a half times as frequent among the Netherlanders; the eating of spiced food and the taking of very hot food, 60 C. or hotter, is two and a half times as frequent among the Netherlanders and the custom of eating exceedingly rapidly and the habit of smoking to marked excess are five times as great among the Netherlanders. I think this emphasizes the conclusions that Dr. Jordan made. It emphasizes that the medical man should be a source of education in his community; his influence should be toward studying the small lesion, the small benign ulcer, the small polyp and gastritis. Everything clinically possible should be done to prevent the development of these lesions, as they may later predispose to more serious lesions.

DR. SARA M. JORDAN, Boston: I thank Drs. Cunha and Underwood for their discussions. There are two things more I should like to say about the study: 1. I felt it necessary, after studying the data, to follow the known achlorhydric patients by frequent x-ray examination because several patients with cancer of the stomach were known in previous years to have had achlorhydria. 2. I tried to make some correlation between the duration of symptoms and the operability of the lesion and, unfortunately, was not able to do so. This vitiates, in a way, my theme, which is a plea for early diagnosis, except that in each case it, of course, would have been an advantage to the individual subject to have an earlier diagnosis; therefore, if I may be a little facetious, the whole plea for early diagnosis is one for rugged individualism in the treatment of cancer of the stomach, with a disregard for the average discouraging prognosis of the disease.

FRACTURES OF THE LOWER END OF THE HUMERUS

GEORGE J. GARCEAU, M.D.

INDIANAPOLIS

It appears that physicians in general fear fractures of the lower end of the humerus. Many practitioners must treat these fractures in their communities. Often they ask the question "In what type of fractures about the elbow should I assume the full responsibility?" A knowledge of the prognosis would help them to select the fractures which are attended with the least danger. The treatment of supracondylar fractures is different from that of fractures of the lateral or medial condyle. This fact should also be of some help.

This paper, based on an analysis of 133 fractures involving the condylar region of the elbow, is an attempt to answer this question.

One hundred and seven, or 80.5 per cent, of the 133 fractures were of the supracondylar and epiphysial separation type. Fifteen, or 11.2 per cent, involved only the lateral condyle. Eleven, or 8.2 per cent, were fractures of the medial condyle.

Fig. 1 (case 1).—Supracondylar fracture of the left humerus.

SUPRACONDYLAR FRACTURE

The average age of patients with supracondylar fracture was 8.1 years. The youngest patient was 2 years old and the oldest 17. Eighty-four, or 78.5 per cent, were between the ages of 4 and 11 years. Ten were older than 13 years.

It is generally understood, and I thought correctly so, that if supracondylar fractures are fairly well reduced a satisfactory result will be obtained. I have compared the degree of reduction with the final result.

For comparison I have classified the reductions as shown by roentgenogram as excellent, good and fair. An anatomic restoration was called excellent. One with complete correction of the lateral or medial displacement of the lower fragment but with incomplete reduction as seen in the lateral plane was called good. Incomplete reduction in all angles was classified as fair.

In the supracondylar group, fifty-four reductions (50.5 per cent) were excellent. Of these, in 94.4 per cent there were excellent end results, and no unsatis-

From the Indiana University School of Medicine.

Read before the Section on Orthopedic Surgery at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.

factory results occurred. In contrast, there were only 48.4 per cent excellent results in the group classified as good reductions. In the fair reductions there were only 9 per cent excellent results. This comparison would make one reflect on the statement that a fairly well reduced supracondylar fracture will give a satisfactory elbow. It is true that many elbows so treated

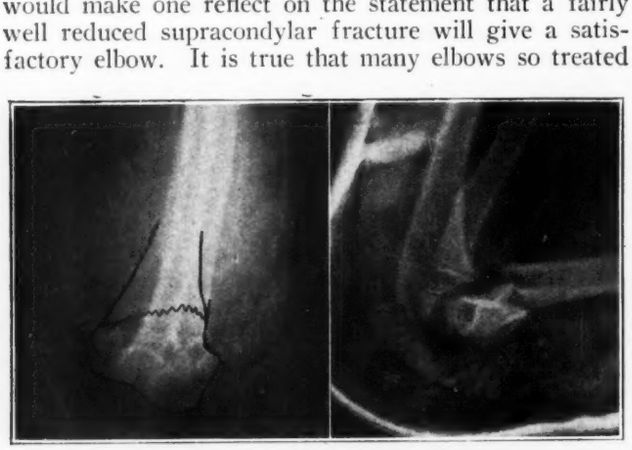


Fig. 2 (case 1).—Supracondylar fracture of the left humerus, reduced by manipulation.

have excellent function, but if deformity is present the result cannot be classified as excellent. Twenty-five of the 107 elbows had normal range of motion but had slight to very noticeable valgus or varus deformity after two years. These results have been classified as good or fair.

In the group of 107 cases the results were as follows: sixty-eight (63.5 per cent) excellent, twenty-four (22.4 per cent) good, twelve (11.2 per cent) fair and three (2.8 per cent) poor. Of the patients with poor results, one underwent amputation of the arm for gas gangrene with recovery, one had Volkmann's ischemic contracture and one has poor function with disability. Of the

Fig. 3 (case 1).—Excellent result. The line of fracture can be seen growing away from the elbow. There is a disturbance of the trochlear epiphysis.

twenty-five elbows with deformity, fourteen have visible angulation, eleven have valgus and three nave varus deformity.

Seven of the twelve patients with fair results have limitation of motion and all have either valgus or varus deformity. Limitation of flexion will disappear with growth in cases in which the limitation is due to an anterior bone block at the lower end of the upper fragment.

Eight of the 107 patients required open operation owing to delayed reduction. Late open reduction is followed by slow restoration of function. The prognosis in supracondylar fracture of the humerus is good if early and accurate reduction is obtained.

The complications encountered were few. One patient had palsy of the radial nerve and recovered after neurolysis. One with palsy of the median nerve recovered spontaneously in about three months. Two elbows showed signs of ischemia. One was opened and the bicipital fascia was sectioned, resulting in excellent recovery. In the one which was treated without operation typical Volkmann's ischemic contracture developed. Myositis ossificans was not noted.

My plan of treatment is early reduction. Even when great swelling is present, reduction is attempted. Delay of three or four days makes reduction difficult, owing to induration of soft tissues and contracture of the triceps muscle and tendon.

The displacement of the lower fragment was backward, upward and often medial or lateral. In no instance in this series was the lower fragment displaced anteriorly.

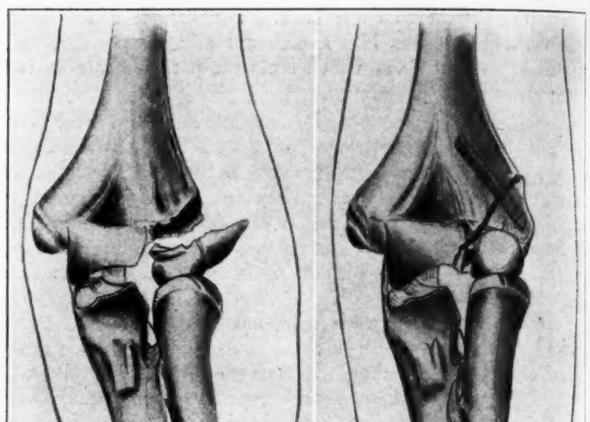


Fig. 4 (case 2).—Fracture of the lateral condyle in a girl aged 11 years.

Under general anesthesia the laterally or medially displaced lower fragment is brought directly behind the shaft of the humerus. The elbow is extended and traction applied to the forearm. The elbow is then slowly flexed while both thumbs push downward and forward against the condyles, thus correcting the upward and backward displacement. The tendency is to correct incompletely the lateral displacement of the lower fragment. The arm is immobilized in a slightly padded posterior molded plaster splint, the elbow flexed from 45 to 70 degrees, and the forearm semipronated. The pronation relaxes the bicipital fascia. If the swelling is great, flexion of the elbow must be less. A roentgenogram is immediately taken, and if the reduction is not satisfactory the manipulation is repeated. Lateral or medial displacement of the lower fragment will result in valgus or varus deformity. Complete immobilization is maintained for at least three weeks. At the end of five weeks, support is discontinued. Heat, massage and active motion are used but forceful passive motion is not employed. Physical therapy is not used extensively.

Volkmann's ischemic contracture is the most dreaded complication. A palpable radial pulse does not indicate

that ischemia is not impending. The contracture is due to the fibrosis of muscle tissue from anoxia. The venous obstruction may result from impingement of the lower end of the upper fragment onto the cubital veins, injury to the cubital veins, swelling or pressure from a hematoma under the antibrachial fascia. The venous return is blocked, resulting in the bursting of capil-

Fig. 5 (case 2).—Fracture of the lateral condyle treated by open reduction pinned with a beef bone peg.

laries in the muscle tissue. Pain, dusky blue discoloration, swelling, coldness of the hand, diminished tactile sense and diminished voluntary motion of the fingers are the danger signs. When these are present, flexion of the elbow should be decreased and, if improvement is not rapid, section of the bicipital fascia is indicated. Delay results in irreparable damage. Splintage may be a contributory cause but is seldom the primary cause of Volkmann's contracture. Early reduction, elevation of the arm or, if necessary, section of the bicipital fascia will lower the incidence of ischemic contracture.

FRACTURES OF THE MEDIAL CONDYLE

There were eleven fractures of the medial condyle, 8.2 per cent of the series. The ages ranged from 2 to 15 years and averaged 8.2 years. The displacement was mild in five cases and considerable in six. The results were excellent in 45.5 per cent, good in 45.5 per cent and poor in 9 per cent (one case). There were four open reductions with internal fixation, with end results classified as good. The patient with a poor result should have had internal fixation. One patient had palsy of the ulnar nerve at the first examination but recovered spontaneously in about six months. Medial condylar fractures with displacement should be opened and internal fixation of the fragment used.

FRACTURES OF THE LATERAL CONDYLE

Fractures of the lateral condyle offer a more formidable problem. Many excellent contributions have appeared on this subject, especially those of Speed and Macey [1] and Wilson.[2] Lateral condylar fracture with displacement is considered to indicate open reduction and internal fixation with a nail, bone or ivory peg.

1. Speed, J. S., and Macey, H. B.: Fractures of the Humeral Condyles in Children, J. Bone & Joint Surg. **15**: 903 (Oct.) 1933.
2. Wilson, P. D.: Fractures and Dislocations in the Region of the Elbow, Surg., Gynec. & Obst. **56**: 335 (Feb.) 1933.

There were fifteen (11.2 per cent) lateral condylar fractures in this group. The average age was 8.5 years. Six patients (40 per cent) with considerable displacement were treated by open reduction. Of these, two have excellent and four have good results. For nine with little displacement of fragments reduction by closed manipulation was used. Of these, two have excellent, three good, two fair and two poor results. The two patients with poor results have anterior displacement of the condyle with union. One patient with a functionally fair result has nonunion. The prognosis in fractures of a single condyle, even with open reduction and pinning, is not so favorable as in the supracondylar type. This type of fracture, as seen in the roentgenogram, does not appear as serious as the supracondylar fracture. No neural lesions were observed in this group.

Analysis of cases for epiphysial disturbance revealed fourteen instances. The epiphysial architecture at the lower end of the humerus is complicated. There are at least four important centers of ossification: the two epicondyles, that of the trochlea and the epiphysis of the capitellum. It is not surprising that the epiphyses are often involved in the so-called supracondylar and always in the single condylar fractures. The fourteen patients with cubitus valgus and varus had disturbance of growth. The deformity could not be entirely accounted for by displacement laterally or medially. The anteroposterior views demonstrated excellent reposition of the lower fragment. The deformity increased in two years. I believe this was due to arrested or delayed growth at the epiphysis.

SUMMARY

1. Supracondylar fractures of the elbow must be differentiated from single condylar fractures.

Fig. 6 (case 2).—Result excellent, no deformity being present after fifteen months.

2. Supracondylar fractures should be reduced accurately and early. Lateral or medial displacement of the lower fragment must be avoided to prevent deformity, especially when the epiphysis is involved.

3. Single condylar fractures with displacement are best treated by early open reduction and internal fixation.

4. Volkmann's ischemic contracture is due to obstruction to venous circulation in the forearm. Early reduction is the best prophylaxis.

5. Epiphysial disturbance may be expected in a small percentage of cases.

6. The physician can utilize the prognosis as a guide in assuming full responsibility for treatment.

508 Hume-Mansur Building.

ABSTRACT OF DISCUSSION

DR. J. H. DORMAN, Dallas, Texas: I believe that the reason better treatment for fractures is not had is that fractures as a subject are entitled to a place of their own and should be taught better. The student should be made to realize the importance of proper treatment in the first service rendered, as this is the all important service and must be rendered by the man on the ground. Such service can be rendered by the specialist only in a comparatively few instances.

DR. H. W. SPIERS, Los Angeles: Dr. Garceau has presented an excellent review of his rather large series of fractures of the lower end of the humerus of children. His effort to answer the question of the general practitioner "In what type of fractures of the elbow joint should I assume full responsibility?" is a praiseworthy one. There are so many pitfalls to avoid in the successful care of fractures of the elbow in youth that one hesitates to be at all dogmatic. One thing seems certain: Excellent early reduction and maintenance of reduction will secure a good anatomic and functional end result. It might be well said "Call for help when reduction is difficult and not satisfactorily maintained." My experience coincides with that of Dr. Garceau in that single condylar fractures with displacement require early open reduction and fixation. This is not always an easy procedure. With the capitellum it is sometimes almost impossible. Here in California the medicolegal problem in connection with fractures in children is a serious one. The statute of limitation for minors does not hold until the person has passed his twenty-second birthday. I should have liked to hear Dr. Garceau say something about the difficulties of x-ray diagnosis of fractures about the elbow in childhood. Many of the problems of malunion that have been encountered are based on this diagnostic difficulty. It has been my routine to roentgenograph the opposite elbow for comparison when the condition is doubtful. The epiphyses about the elbow are numerous; consolidation of these makes an ever changing picture. Fractures through the epiphyses and cartilage often are not readily apparent. The angle of the capitellum and the shaft changes as growth takes place. The foundation of Dr. Garceau's entire summary is predicated on accurate x-ray diagnosis. To me this item seems tremendously important in assuming responsibility. The author has given the unvarnished end results of his experience. I am in agreement with them; however, I would suggest to the average general practitioner that he be fully awake to the load he must carry if he treats complicated fractures of the elbow of children.

DR. J. ALBERT KEY, St. Louis: I do not know why Dr. Garceau did not include fractures of the epicondyle of the humerus with the fragment displaced into the elbow joint. In cases I have observed it has been necessary to open the joint, get that fragment out and fix it back in place. Dr. Garceau made the statement that Volkmann's ischemic contracture is due to venous obstruction, and that has been the general opinion since Barney Brooks reported his experimental work in which he tied off the veins to the gastrocnemius muscle in the dog. A month ago I opened the forearm of a boy 10 years old who had had a supracondylar fracture previously and who had a perfect anatomic reduction with immobilization in acute flexion. When I saw him three weeks later he had complete paralysis of his median and ulnar nerves and typical Volkmann's ischemic contracture. I performed neurolysis of these nerves from the wrist to a point above the elbow, and the muscles looked like the white meat of a chicken. The amazing thing to me was the relatively slight bleeding. I was delayed considerably in my operation by attempting to preserve the radial and ulnar arteries. I started from the bottom because it seemed to me that that was the easiest place to find these nerves. By the time I got up to the elbow I began looking for the brachial artery and I could not find it. It was not until that dissection was carried 3 inches above the elbow that I was able to get a pulsating brachial artery. In other words, this Volkmann's paralysis occurred in the presence of total occlusion of the artery and not of the veins. It was stated that the hand had not been noticeably swollen at any time.

DR. HUGH T. JONES, Los Angeles: Another word about Volkmann's ischemic contracture: Not long ago I was called to see a child who on a Sunday night had sustained a fracture of the elbow. The general practitioner in charge had watched the arm until Wednesday night. There had been a radial pulse Wednesday night. Thursday morning, very early, it was absent. I saw the patient about 5 a. m. I reduced the fracture, using Kirschner wires. There were signs of paralysis of the median nerve. Neurolysis was done. I also tried to expose the brachial artery. I had trouble too in finding it, but cut the fascia of the biceps and was sure that I had relieved all pressure about this artery. Still there was no return of the radial pulse. It worried me a great deal. I closed the wound. In the course of the morning a positive and negative pressure apparatus was used without help. In the afternoon the child still did not have a radial pulse. The stitches were taken out of the skin of the wound, and immediately the radial pulse came back. It happened that the skin had stretched to its elastic limits and was acting as a tourniquet about that arm, because the second that I took those stitches out of the skin the radial pulse returned. So I am sure, along with Dr. Key, that I had encountered a case in which the brachial artery was at fault instead of the veins.

DR. STEELE F. STEWART, Los Angeles: I want to stress again the points concerning Volkmann's ischemic contracture. First, I feel that in case of a rapidly swelling forearm fascial decompression should be done at the earliest possible moment; second, I agree with Dr. Key as to the importance of the brachial artery and wish to record one case in which Volkmann's ischemic contracture followed a compound fracture and division of the brachial artery in the midarm.

DR. GEORGE J. GARCEAU, Indianapolis: Difficulty is often encountered in obtaining satisfactory anteroposterior roentgenograms, which are necessary in order to estimate the degree of reduction. I often take roentgenograms of the opposite elbow for comparison. Drs. Key, Jones and Stewart believe that injury to the artery may cause Volkmann's contracture. I agree with that opinion. It is my belief that the contracture is the result of anoxia and, of course, arterial occlusion will cause anoxia. The artery may be injured by the lower end of the upper fragment. It may be torn. I have opened such forearms and found the muscles full of bloody exudate. In one such case the artery was patent. I doubt very much that splintage is a primary cause of Volkmann's contracture. I believe that the original injury is the cause and not the method of treatment.

Prevention of Malaria in Italian Troops.—In the recent war in Ethiopia malaria did not give very serious concern, although on the northern front a number of zones were badly malarial and on the southern front all the zones were terribly malarial, the disease being absolutely general among the indigenous Somali population. With a white army approximating half a million men there were 1,241 cases of primary malaria admitted to hospital and 1,093 admissions for relapses, with twenty-three deaths from pernicious forms, including blackwater fever, which was extremely rare. . . . What were the prophylactic measures taken? With the troops continuously on the move and the area of operations being enormously extended, mosquito nets and antilarval measures were often impossible. From the beginning we insisted on quinine prophylaxis: every soldier received three tablets a day of quinine sulfate or bihydrochloride, each tablet containing 0.2 Gm. (3 grains). The men also knew that we could find out whether they had taken quinine or not. They were frequently paraded, and one in every ten or twenty men was made to pass urine. This was tested with Tanret's reagent: on adding a few drops of this reagent, if quinine has been taken, the urine becomes turbid; if quinine has not been taken, the urine remains clear.—Castellani, Sir Aldo: *J. Roy. Nav. M. Serv.* **24**:304 (Oct.) 1938.

Clinical Notes, Suggestions and New Instruments

LOSS OF SUBCUTANEOUS FAT OF THE LOWER EXTREMITIES (LIPODYSTROPHY)

JOHN A. BIGLER, M.D., CHICAGO

Lipodystrophy is a disorder in which there is a loss of subcutaneous fat. The loss is absolute in that in the affected areas there is a complete absence of the subcutaneous tissue fat. None of the other tissues seem to be involved. The face is affected most commonly and more markedly than other parts of the body. The absence of fat is not congenital, because in affected persons the fat has previously been present in the regions from which it disappears. In some reported cases there has been an apparent increase in the fat of the lower part of the body. The condition is undoubtedly a disease entity rather than a symptom complex because of the absence of any other clinical, physical or pathologic manifestations. In association with other diseases there may be a marked decrease in the amount of subcutaneous fat but the fat loss is never absolute. The disorder is not familial, and there is no impairment of the health. The onset usually occurs from the fourth to the eighth year of age. The case here reported is unique in that, while there is the typical loss of subcutaneous fat, only the lower legs are affected, the face and upper parts of the body being normal. I have been unable to find any record in the literature of a similar case.

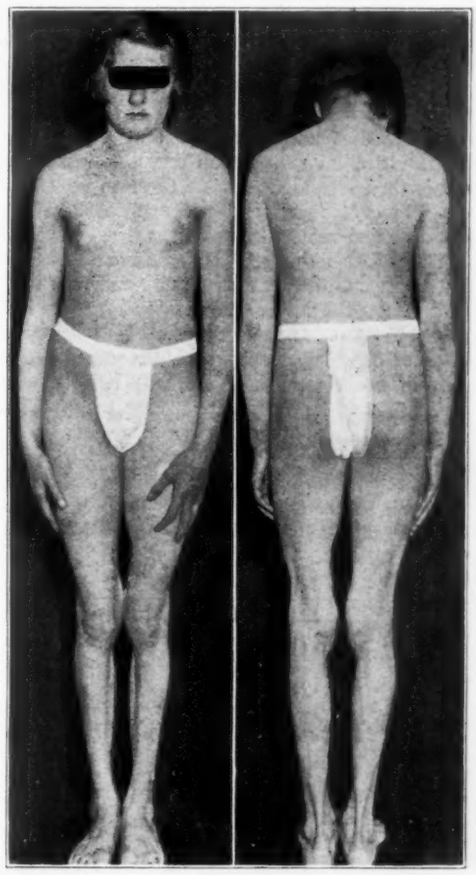
N. M., an Italian girl born Sept. 23, 1923, was first seen in the Children's Memorial Hospital outpatient department Sept. 13, 1935. The only complaint was of underweight. There had apparently been normal development and nutrition until the age of 8 years. Since then there had been a progressing thinness, this being most marked in the lower extremities. The mother said that because the family was very poor the child did not get enough to eat. There was no loss of appetite. The birth was normal. There was a history of chickenpox at the age of 2 years, mumps at the age of 3 years and measles at the age of 5 years. There had been no illness near the time the loss of weight was first noticed. Three sisters and two brothers all older than the patient were apparently normal. The mother and father were living and well.

Physical examination revealed that the child was very thin; she was 56 inches (142 cm.) tall and weighed only 59 pounds (27 Kg.). The lower extremities appeared emaciated in contrast to the degree of malnutrition of the rest of the body. The skin was of normal color and was soft and elastic everywhere. Over the lower part of the legs it was extremely thin as compared with that of the rest of the body, although marked malnutrition was present. The reflexes were normal, as was the muscular power. Cutaneous sensation was normal. The veins and muscles were easily visible through the thin skin of the lower part of the legs. The examination was otherwise normal. The child was active and not physically handicapped.

The basal metabolism rate was plus 11. The intelligence quotient was rated as 77 per cent. The red blood cells numbered 5,440,000 and the white blood cells 7,600 per cubic millimeter. The differential count showed 50 per cent polymorphonuclears, 27 per cent lymphocytes, 16 per cent monocytes, 6 per cent eosinophils and 1 per cent basophils. The Wassermann and Kahn reactions of the blood were negative. The Pirquet, Schick and Dick reactions were negative.

A section of skin taken down to the muscle fascia from the calf of the left leg appeared normal except for a complete absence of fat. A section taken from the area above the left knee where the skin shows an abrupt change in its thickness was normal grossly and the fat was of the usual yellow color. The fat varied from 1.5 to 0.5 cm. in thickness. On microscopic examination the section of skin from the calf revealed a complete absence of fat in the skin and subcutaneous tissue. The hair follicles contained a small amount of fat-staining material. Where the subcutaneous fat should have been there were a few layers of a loose fibrous network. In every other respect the sections were normal. In the sections taken from the thigh the skin appeared normal, as did the fat layer. The fat stained normally, and the fat cells were of the usual size. No changes could be seen to account for the decrease in the subcutaneous fat, although these sections were taken from an area which had partially undergone loss of fat. The microscopic diagnosis was complete loss of subcutaneous fat.

After more food was furnished to the family the child's weight increased to 67¼ pounds (30.5 Kg.) and the height to 57 inches (145 cm.) in five months. The contrast between the nutrition of the lower legs and that of the rest of the body was more marked than previously. After the child had spent one year at a farm school, the weight increased to 90 pounds (41 Kg.) and the height to 61.2 inches (155 cm.). At this time the child was well nourished, even plump, down to the lower third of the thighs. From there down the lower legs still appeared emaciated, as did the feet.



Patient weighing 90 pounds (41 Kg.) and 61 inches (155 cm.) in height. Note the extreme thinness of the lower legs as compared with the rest of body.

The gradation from the normally thick to the thin skin takes place rather sharply above the knees. Curiously, there is a small area anteriorly below the knees on both legs where the skin is of nearly normal thickness. The affected skin feels normal except for the loss of fat. Because of the thinness of the skin the veins are prominent and the muscles stand out. Menstruation has not begun, but the breasts are moderately developed and the other prepuberty changes are present. There is no muscular weakness, and except for the loss of subcutaneous fat the child is healthy and normal. The illustration shows her as she appears now, with the well marked contrast between the lower legs and the rest of the body.

Lipodystrophy is not an uncommon disease. Approximately 100 cases have been reported, and undoubtedly many more have been observed. The skin of the face, neck and thorax is most commonly affected, but there may be extension to involve the scalp and arms and the trunk down to the iliac crests. Twelve cases in which there was involvement of the skin of the face, neck and even the thorax have been observed at the Children's Memorial Hospital.

From the Otho S. A. Sprague Memorial Institute and the Children's Memorial Hospital.

It seems that only rarely does the loss of subcutaneous fat extend from above to include the thighs because only three such cases have been reported. Watson and his associates [1] had a 38 year old patient with involvement of the face, neck and trunk and the thighs down to the tibial tuberosities. There was thought to be extra fat below the knees. In Christiansen's [2] 40 year old patient the loss of fat involved the face, upper part of the arms, trunk and thighs. Microscopic sections of the skin of the arm and thigh revealed a complete absence of fat. A boy 14 years old with involvement of the whole trunk and the upper part of the thighs was observed by Leipoldt.[3] In a case reported by Gilchrist [4] there was a loss of subcutaneous fat in various-sized localized areas of the legs. This case was not typical of lipodystrophy in that there was evidence of some peculiar type of infectious process.

The etiology of the loss of subcutaneous fat is unknown. Postmortem studies and tests of the body chemistry, including both fat and carbohydrate metabolism, have all given negative results in such cases. The following theories have been advanced to explain the loss of fat: 1. There is a local disturbance in the subcutaneous tissue interfering with the normal disposition of fat; but in these cases fat is actually absorbed. 2. There is a dysfunction of one or more of the endocrine glands. When glandular dysfunctions are present there is usually an increased deposit of fat rather than complete loss of fat. Also, if the loss is on an endocrine basis there is no reason why it should always be localized and never general in distribution. 3. There is a disturbance of the trophic nerve mechanism having to do with fat distribution and metabolism. It has been suggested that there may be a center in the midbrain in the region of the floor of the third ventricle for the control of fat metabolism and distribution. If such a center exists it is peculiar that in all the cases of lipodystrophy so far reported the loss of fat extended from the upper portion of the body downward and that in no case was it generalized. One may reasonably ask why involvement of the lower extremities alone is so rare.

Lipodystrophy is easily differentiated from cachexia in that the latter condition is of general distribution and although there is a decrease in subcutaneous fat the fat is never completely absent. No form of therapy is known which is of benefit in the case of lipodystrophy.

707 Fullerton Avenue.

RUPTURED TUBAL PREGNANCY

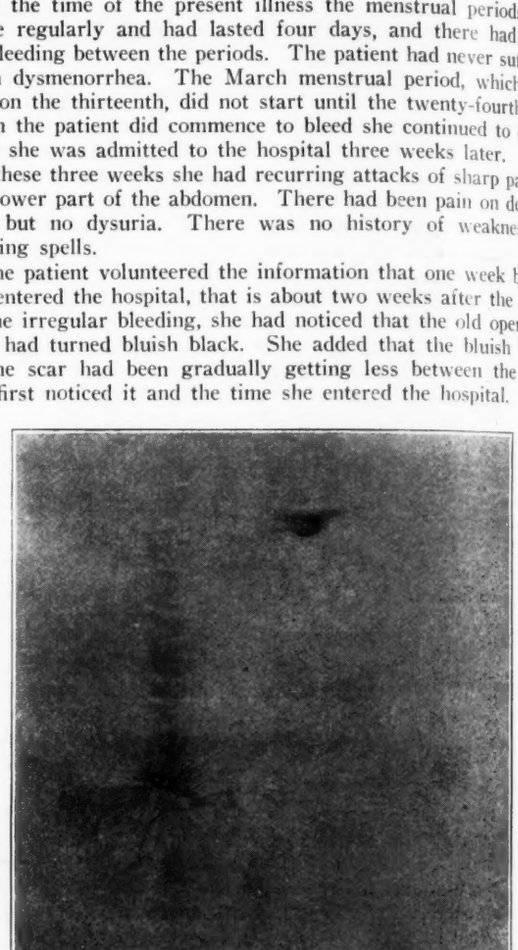
A HELPFUL DIAGNOSTIC SIGN

LEO BRADY, M.D., BALTIMORE

Almost twenty years ago T. S. Cullen [1] drew attention to bluish discoloration of the umbilicus as a sign of ruptured extrauterine pregnancy and even though this sign is shown by only a small percentage of the patients with tubal gestation nevertheless quite a large number of cases showing bluish discoloration of the umbilicus have been now observed and reported. Hence I would hesitate to increase the already large number of reports of such cases were it not that a patient whom I recently had under my care showed a Cullen sign which differed from the majority of the cases already reported in that the discoloration of the skin and subcutaneous tissue did not appear at or around the umbilicus or in a postoperative hernia but in a thin spot in the abdominal wall which had developed as the result of an operation for a ruptured appendix. A careful study of the literature revealed that only two such cases have been previously reported, one in 1932 by Schmitz [2] and the second in 1935 by Smith and Wright.[3]

A summary of my case is as follows: Mrs. A. S., aged 35, was admitted to the Johns Hopkins Hospital April 17, 1938, complaining of pain in the lower abdomen and irregular uterine bleeding. She had been operated on for a ruptured appendix in 1923. The rest of her past history was unimportant. Up until the time of the present illness the menstrual periods had come regularly and had lasted four days, and there had been no bleeding between the periods. The patient had never suffered from dysmenorrhea. The March menstrual period, which was due on the thirteenth, did not start until the twenty-fourth, but when the patient did commence to bleed she continued to do so until she was admitted to the hospital three weeks later. During these three weeks she had recurring attacks of sharp pain in the lower part of the abdomen. There had been pain on defecation but no dysuria. There was no history of weakness or fainting spells.

The patient volunteered the information that one week before she entered the hospital, that is about two weeks after the onset of the irregular bleeding, she had noticed that the old operative scar had turned bluish black. She added that the bluish black in the scar had been gradually getting less between the time she first noticed it and the time she entered the hospital.



Cullen sign appearing in a postoperative scar in a case of ruptured tubal pregnancy. The color is most intense in the center of the scar and fades out in the tissues around the scar. The umbilicus is normal.

On admission to the ward the patient did not appear to be in shock. Her temperature was 98.6 F. and her pulse rate 80 to the minute. The hemoglobin was 84 per cent and the leukocyte count 9,000. The breasts showed colostrum. The abdomen was not distended and the respiratory movements were free. The right lower quadrant of the abdomen presented a remarkable appearance. The center of the postoperative scar was bluish black, while the surrounding area showed different hues of color, such as are seen in a fading bruise. The umbilicus itself was normal in appearance. There was no hernia in the postoperative scar but the abdominal wall was thin in this region. There was definite tenderness on palpation over the lower part of the abdomen.

On vaginal examination the cervix was soft. The body of the uterus was forward and slightly enlarged. There was marked tenderness on pelvic examination and in the left fornix a soft sausage-shaped mass could be felt. A diagnosis of a ruptured left tubal pregnancy was made.

The drawing shows the appearance of the abdomen before operation. The bluish black discoloration of the scar made me feel confident that my diagnosis of ruptured tubal pregnancy was correct, even though I was aware that occasionally other conditions, such as bleeding from an ovary, may cause intra-abdominal hemorrhage and thus may produce a Cullen sign.

1. Watson, W. N. B., and Ritchie, W. T.: Progressive Lipodystrophy, Quart. J. Med. **18**: 224 (Jan.) 1925.
2. Christiansen, V.: Rev. neurol. **38**: 1169 (Sept.) 1922.
3. Leipoldt, C. L.: Notes on a Case of Lipodystrophia Progressiva, South African M. J. **15**: 161 (Feb.) 1920.
4. Gilchrist, T. C., and Ketron, L. W.: A Unique Case of Atrophy of the Skin, Preceded by the Ingestion of the Fat by Large Phagocytic Cells—Macrophages, Bull. Johns Hopkins Hosp. **26**: 291 (Oct.) 1916.

1. Cullen, T. S.: Bluish Discoloration of the Umbilicus as a Diagnostic Sign where Ruptured Extra-Uterine Pregnancy Exists, Contributions to Medical and Biological Research Dedicated to Sir William Osler on his Seventieth Birthday, New York, Paul B. Hoeber, 1919.
2. Schmitz, Elisabeth: Zur Diagnostik der rupturierten Extrauterinegravidität, Med. Klin. **28**: 756 (May 27) 1932.
3. Smith, Irwin, and Wright, F. J.: Cullen's Sign in Ruptured Ectopic Gestation, Lancet **1**: 930 (April 20) 1935.

At operation about 200 cc. of old blood was found in the pelvis. The omentum was adherent along the old operative scar. The left tube was the site of an ectopic pregnancy. The rupture has occurred in the tube near its distal end. The left fallopian tube was removed. The patient's convalescence was uncomplicated and she was discharged on the sixteenth day after operation. While the patient was in the hospital the bluish black discoloration in the old scar gradually lessened, but it was still apparent when she was discharged and did not disappear until the patient had been home about two weeks.

SUMMARY

In a case in which the typical bluish black discoloration of the skin and subcutaneous tissue first described by Cullen as indicating intraperitoneal hemorrhage was seen, the discoloration occurred in a weak spot in a right rectus scar and not at the umbilicus. There was no postoperative hernia. It would seem, therefore, that in cases in which intra-abdominal hemorrhage is suspected the Cullen sign should be looked for not only at the umbilicus but also in any weak spots in the abdominal wall, such as sometimes result from abdominal operations, even when there is no hernia present.

Medical Arts Building.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

ALLERGIA PILLOWS AND MATTRESSES ACCEPTABLE

Manufacturer: Allergia Products Company, 99 Chapel Street, Newton, Mass.

Allergia Pillows and Mattresses are recommended to give relief from allergic disturbances which are caused or aggravated by the irritation of dust generated by normally used bedding fillers. It is claimed that Allergia Products Company employs a pure silk fiber which has the inherent property of not breaking down into dust so readily as do commonly employed filler materials. The filler is encased within a diastaford woven tick, the latter having been processed to render it normally free of sizing, dust and starch, which are generally considered to be allergic irritants.

An Allergia mattress is made in much the same way as any other mattress but differs in the respect that any materials which may offer an allergic disturbance have been omitted and materials which are known to be relatively free from irritating dust are used in their place. These mattresses are made with an inner spring unit which is covered with deep layers of filling material both top and bottom.

The firm claims, further, that its products provide relief in approximately 98 per cent of the cases in which the individual is sensitive to house dust. In this connection the firm states that it is mindful of the fact that of all allergic persons who are sensitive to house dust there are approximately 2 per cent who are allergic to silk. The firm believes that those who are sensitive to silk are sensitive to it in some other form than that used in Allergia filling material. For example, those who might be sensitive to a cutaneous contact with silk would not be apt to be sensitive to it within a pillow ticking.

To support the claim that the pure silk fiber used in Allergia products has the inherent property of not breaking down into dust so readily as do the other commonly used filling materials, the firm submitted a box of Allergia filling material which had been in use in a mattress for over two years. This was referred, along with the pillow and mattress, to a qualified investigator appointed by the Council. The following report on the product was submitted:

Saline extracts were made from the new material and from that which had been in use in a pillow for two years in accordance with the usual technic employed in making house dust extracts. This consists of placing a handful of the material in a pint jar and wetting it thoroughly with physiologic solution of sodium chloride containing 0.4 per cent phenol. Sufficient additional fluid is added so that the jar will be filled about one-eighth inch above the soaked material. The surface is covered with toluene, the jar is covered and the extraction is allowed to proceed for twenty-four hours. The saline extract is then squeezed out and is filtered through a Seitz filter. In this way a solution of the active material, as nearly saturated as possible, is obtained. This material is used intradermally, undiluted.

Five extremely house dust sensitive allergic persons were tested with extracts from both of the materials referred to and it was found that, whereas there were no reactions to the new material, relatively large and significant reactions were obtained to the extract of the material which had been used for two years with four of the allergic persons.

Since it was desirable to eliminate any error due to some irritating material which might be present in the used sample, both extracts were then dialyzed against distilled water for forty-eight hours. The salt content was then brought up to 0.85 per cent and further tests were made on the same five patients with the same result. Good reactions were not obtained with other patients given very small or indifferent tests to house dust and, while some of the active material which is called house dust is formed in the Allergia material, it is present in much less concentration than in a cotton mattress or pillow in use for the same length of time.

It is worth while to state that there is no such thing as a nonallergic substance. There can be only substances which are less likely to be the cause of sensitivity than others. The Allergia pillows and mattresses seem to belong to the latter category.

As a practical measure any bed may be rendered efficient and satisfactory for the house dust sensitive patient by completely encasing the mattress and pillows in any impervious material.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Allergia Pillows and Mattresses for inclusion in its list of accepted devices.

MEDICOPASTE BANDAGE ACCEPTABLE

Manufacturer: Medicosane Laboratories, 1472 Broadway, New York.

Medicopaste Bandage is an adhesive gauze bandage impregnated with zinc oxide paste (Unna's boot). The bandage proper is wrapped in four layers of wax paper and placed in an air-tight can. It is a 4 inch bandage available in 7 or 10 yard lengths. The active ingredients include zinc oxide, glycerin and 0.1 per cent each of phenol (carbolic acid) and formaldehyde as preservatives. The melting point of the medicinal paste is lowered so that it stays liquid at usual room temperatures and needs no heating. Thus the wet bandage may be applied in the form of an Unna boot without heating or painting. It is white.

The company recommends it as a means of applying a firm yet resilient compression dressing or mechanical support which will not yield to the expansion pressure of swelling. It aids the circulation by applying an even continuous pressure. In addition, it is claimed that the paste stimulates healing and is nonirritating to the skin.

Principal indications for its use, according to the firm, are vascular inflamed varicose veins, thrombophlebitis, ulcers, swellings, postfractures, foot ailments and eczemas. Other possibilities of use include sprains, prophylactic dressings in threatened thrombophlebitis, dressings on other parts of the body and in unpadded plaster of paris casts as an intermediate layer between the skin and the cast. This product was examined and tried in clinical practice and found useful for the treatment of thrombophlebitis and ulcers and apparently fulfils the requirements of a firm, elastic, resilient support.

In view of the foregoing report, the Council on Physical Therapy voted to include the Medicopaste Gauze Bandage in its list of accepted devices.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, FEBRUARY 18, 1939

THE AMERICAN MEDICAL ASSOCIATION STUDY OF MEDICAL CARE

Reports received on the American Medical Association Study of Need and Supply of Medical Care already cover a far larger sample of the population than has been covered by any previous survey. This is the first survey that has asked and obtained information from all groups in the population definitely interested in medical care. Many who should know better still repeat the falsehood that this survey requests information from physicians only and insinuate that doctors know nothing about those who do not come to the physician's office.

Only one of the nine forms used in this survey is directed to physicians and dentists. The others are sent to hospitals, nurses, health departments, welfare and relief agencies, schools both public and parochial, colleges and universities, fraternal and similar organizations, and pharmacists. All these are asked for information concerning persons unable to obtain needed and desired medical care. Not one significant source of first hand, reliable information as to medical conditions has been omitted.

The returns from the eight forms sent to others than physicians are uniformly much more complete than those from the physicians and dentists. It is not at all uncommon for a county medical society to receive 100 per cent replies from these institutions and individuals, while no such percentage of returns has ever been obtained from physicians and dentists.

However much generalized discussion and disagreement there may have been between representatives of some of these institutions and the medical profession as to the extent of medical care, individual managers of hospitals, welfare organizations and similar bodies when asked to report definitely and specifically regarding the conditions with which they are personally familiar agree to a remarkable extent with physicians. In no report so far received has there been any sharp disagreement as to need for additional medical services where such exists and as to the absence of such need in localities where adequate provision of medical care now exists.

The most general lack of medical care that is reported is with regard to insufficient appropriations for poor relief or governmental institutions. The impression is gained from a reading of the reports—which have not as yet been tabulated to make such a conclusion absolutely certain—that the most important obstacles in the way of those who need medical care are the red tape and official regulations which restrict the giving of medical care.

Another striking observation is the large number of counties in which all sources of information agree that no one in the locality who desires and seeks medical care is denied it. The road to such care may be obstructed by the red tape and regulations already mentioned, and there is need to clear away these obstacles; but there is no locality in which any organization even suggests that "one third of the population" is unable to obtain medical service.

BRONCHIECTASIS

The essential abnormality in bronchiectasis, according to Kline,[1] is the absence, atrophy, damage or destruction of elastic and muscular tissues of the bronchial wall. Usually severe inflammation of the various coats occurs first with damage or destruction of the elastic and muscular tissues. Finally there is complete destruction of a portion or all of the bronchial wall, associated with inflammatory and chronic changes of the regional pulmonary parenchyma. In children staphylococci, in adults the Miller-Vincent micro-organisms are frequently the causative agents responsible for the necrotizing changes. Cylindric, fusiform or saccular bronchiectasis develops, depending on the location, extent and severity of the process.

Bloch and Francis [2] differentiate primary or predisposing factors in the etiology and secondary or immediate agents. The primary factors consist largely of acute infectious diseases involving the upper respiratory tract. Among the secondary causes involvement of the nasal sinuses, chiefly the maxillary, is increasingly recognized as having a dominant part in the origin of bronchiectasis. Bronchiectasis, these writers say, is essentially a disease of the lower lobes of the lung which are most easily accessible to drainage from above. One or both lower lobes were involved in fifty-four of sixty patients. Of single lobes, the left lower one is the most frequently affected.

Since the use of iodized oil for bronchography, according to Singer,[3] the positive diagnosis of bronchiectasis can be made even to its character. Following the instillation of the oil, the film would be expected to show the tubes widened, beaded, cylindric or cystic when an atelectatic bronchiectatic area is present. The compensatory lung fields are seen with bronchi wide

1. Kline, B. S.: Pathology of Chronic Nontuberculous Inflammations of the Lung, Am. Rev. Tuberc. **38**: 663 (Dec.) 1938.
2. Bloch, R. G., and Francis, B. F.: Chronic Nontuberculous Infections of the Lung, Am. Rev. Tuberc. **38**: 651 (Dec.) 1938.
3. Singer, J. J.: The Roentgenological Aspects of Nontuberculous Pulmonary Disease, Am. Rev. Tuberc. **38**: 680 (Dec.) 1938.

apart and not dilated. A case of bronchiectasis should not be considered as completely examined roentgenologically until both lungs have been injected. This is particularly important since the medical treatment in most cases is at best only palliative. Bronchoscopy, according to Samson,[4] is also important as a procedure for the diagnosis and treatment of certain pulmonary infections. In bronchiectasis, bronchoscopy usually reveals diffuse dull red mucosal inflammation. There is moderate granulation and ease of bleeding, both observations increasing in intensity as the pathologic lobe is approached. Samson states further that bronchoscopy, while not curative of bronchiectasis, may produce an amelioration of symptoms; in fact, cough and sputum may disappear for years following a series of bronchoscopic aspirations.

Most therapy with the exception of lobectomy in selected cases has proved disappointing. Lobectomy, however, carries definite risks and requires as indication, in the opinion of Bloch and Francis, a unilateral or practically unilateral involvement. One stage lobectomy for bronchiectasis is approved also by Brunn and Goldman [5] based on extensive experience.

The prevention of bronchiectasis has been sadly neglected up to now. There is much parental negligence of chronic upper respiratory infection and chronic bronchitis in children. Bloch and Francis emphasize the danger of slow and continuous flow of infected material into the bronchial passages in the production of bronchitis. They believe that as the growing recognition of the role assumed by chronic sinusitis in this disease increases the occurrence of bronchiectasis should decrease. From a climatic point of view they believe that bronchitis of minor degree is favorably influenced by that atmospheric dryness which is beneficial for sinusitis. However, it seems to them that a permanent change of domicile in most instances alone can yield lasting results.

4. Samson, P. C.: Bronchoscopy in Chronic Nontuberculous Infections of the Lung, Am. Rev. Tuberc. **38**: 688 (Dec.) 1938.
5. Brunn, Harold, and Goldman, Alfred: Surgical Treatment of Nontuberculous Pulmonary Suppurations, Am. Rev. Tuberc. **38**: 703 (Dec.) 1938.

TRAUMATIC FAT NECROSIS OF THE BREAST

Traumatized or ischemic fat in any part of the body can undergo sterile autolysis or heterolysis resulting in saponification by histiocytes and giant cells. Shattock in 1896 gave an accurate description of the changes found in his case of "saponifying necrosis in a lipoma of the thigh." Fat necrosis has occurred in the subcutaneous tissues of young infants (Farr) in a hernial sac, the thigh, the buttock or the abdominal fat. These lesions are harmless and of little clinical importance. When fat necrosis occurs in the cellulo-adipose tissues over the breast or in the breast, however, the lesion assumes a special clinical significance principally because it mimics so closely the clinical signs of mammary cancer. The knowledge of this lesion dates from a report in 1920 of two cases by Lee and Adair.[1] In one of their cases a radical amputation of the breast, muscles and axillary contents was performed because the surgeon believed that the tumor was malignant. In the other, the possibility of a benign lesion was considered and the breast alone was removed.

Hadfield [2] in 1930 collected records of forty-two cases of fat necrosis of the breast, to which he added records of three cases. Dunphy [3] has recently reported sixteen cases of fat necrosis observed in the Peter Bent Brigham Hospital between 1923 and 1937. Two of these occurred in the breast and two in the postoperative mastectomy scar.

Trauma and infection are mentioned as etiologic factors in the production of fat necrosis. The frequency of trauma and infection to which the subcutaneous tissues and fat are exposed on the one hand, and the rarity of the lesion on the other, suggest that there must be still another, possibly endogenous, factor. It has been suggested but not proved that pancreatic cells may be transported to such areas, remain latent and be activated by trauma. Neal [4] believes trauma alone may be sufficient, since all cells contain lipase.

According to Hadfield the lesion in the majority of cases is a small mass of traumatized cutaneous fat undergoing quiet and painless sterile autolysis or heterolysis and that its bulk is increased by the accumulation in it of phagocytes engaged in the absorption of fatty acids and fibroblasts initiating repairs. Eventually the lesion cicatrizes and any unabsorbed fat and saponified products become enclosed in mature fibrous tissue. A thick-walled cyst containing dark fluid results and calcification is frequent in the late stages. The central feature of the process is slow, aseptic saponification of neutral fat by blood and tissue lipase, analogous to pancreatic fat necrosis but much milder in degree and independent of any direct action of pancreatic lipase.

In about 40 per cent of the cases there was a history of rather severe trauma to the breast and in most of them the tumor developed where the injury was inflicted. There was no association with lactation and no discharge from the nipple. The history of duration of the tumor varied from two years to ten days. The tumor appears as a firm painless nodule which gradually and at times rapidly increases in size. In more than 50 per cent there were adhesions to the skin and occasionally the typical "peau d'orange" appearance so characteristic of mammary cancer. In 10 per cent retraction of the nipple was noted. The symptoms which strongly suggest malignancy, according to Lee and Adair, are the rapid increase in size, adhesions to the skin, hard consistency, lack of pain and adhesions to

1. Lee, Burton J., and Adair, Frank: Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma, Ann. Surg. **72**: 188 (Aug.) 1920.
2. Hadfield, Goeffrey: Fat Necrosis of the Breast, Brit. J. Surg. **17**: 673 (April) 1930.
3. Dunphy, J. E.: Surgical Importance of Mammary and Subcutaneous Fat Necrosis, Arch. Surg. **38**: 1 (Jan.) 1939.
4. Neal, M. Pinson, and Ellis, Max M.: Etiological Factor of Fat Necrosis, South. M. J. **23**: 313 (April) 1930.

the deeper structures. They conclude that the diagnosis of traumatic fat necrosis of the breast is possible on gross examination and that in the presence of a distinct history of trauma to the breast and a well circumscribed mass, showing rapid increase in size unassociated with pain and without axillary nodes that are firm, an accurate preoperative diagnosis is possible. However, if occasional unnecessary radical mastectomy or irradiation is to be avoided, reliance should be placed on a biopsy.

OPPORTUNITIES FOR INTENSIVE GRADUATE TRAINING IN OBSTETRICS

The importance of providing medical students and interns with sufficient opportunity for observation and participation in obstetric procedures cannot be overestimated. While many medical schools and teaching hospitals have attempted to organize obstetric instruction so that supervised training of students and interns may provide a maximum utilization of the teaching material available, there are still many patients and considerable free time outside the conventional academic year that may be utilized for undergraduate and graduate study.

A commendable development of the past two years provides practicing physicians in several regions with the opportunity to spend from one to four weeks in hospitals with active ward services in obstetrics. In each the effort is cooperative. The hospital or medical school opens its teaching facilities to the profession; the respective state medical society's committee on maternal health arranges the graduate program and announces the course, and the respective state department of health lends financial aid, usually with funds provided under the Social Security Act. Such courses were successfully conducted at the University of Illinois College of Medicine, Chicago, during the summers of 1937 and 1938 and at the University of Nebraska College of Medicine, Omaha, in July 1938 and were begun at the Indiana University School of Medicine, Indianapolis, in November 1938.[1] Recently through its committee on maternal welfare the Medical Society of New Jersey announced that any practicing physician of New Jersey may attend organized refresher courses given at the Margaret Hague Maternity Hospital in Jersey City.[2]

Each of these intensive intramural courses is designed in essentially the same way. Each is operated on a full one week or two weeks daily schedule with special classes for a limited number of physicians who are given ample opportunity to observe obstetrics as it is practiced under desirable hospital conditions. Lectures in obstetrics and sometimes in pediatrics, conferences, seminars, bedside instruction, antepartum and postpartum clinics, manikin demonstrations, laboratory exercises and home delivery services all have been included to some extent. Either regular members of the teaching staff or special instructors are assigned; in one hospital twenty-six instructors composed the faculty for a class of ten physicians. Fees vary from nothing to $10 a week for one or two weeks' instruction.

Intensive intramural courses in obstetrics have been given on a somewhat different basis at Tulane University of Louisiana School of Medicine, Department of Graduate Studies, New Orleans; Harvard Medical School, Courses for Graduates and Tufts College Medical School, Boston; University of Michigan Medical School, Department of Postgraduate Medicine, Ann Arbor; University of Minnesota Center for Continuation Study, Minneapolis; Washington University School of Medicine, St. Louis, Mo.; Medical Society of the County of Kings and Long Island College of Medicine, Brooklyn; Columbia University, New York City; the New York Polyclinic Medical School and Hospital, New York City; Vanderbilt University School of Medicine, Department of Postgraduate Instruction, Nashville, Tenn., and Duke University School of Medicine, Durham, N. C. Since instruction in these institutions is organized and administered in a different manner from the cooperative courses previously referred to, higher fees are sometimes necessary.

Thus practicing physicians have an opportunity to spend a short period of residence in any one of at least twelve medical centers to learn of the modern methods used in the practice of obstetrics.

1. Postgraduate Committee Offers Intensive Courses in Obstetrics and Gynecology at Indiana University School of Medicine, J. Indiana M. A. **31**: 576 (Oct.) 1938.

2. Bingham, A. W.: Refresher Courses in Obstetrics, Maternal Welfare Article Number Thirty-Two, J. M. Soc. New Jersey **35**: 738 (Dec.) 1938.

Current Comment

GEORGIA PHYSICIANS AND HEALTH OFFICIALS STUDY TOGETHER

Satisfactory progress in public health depends on close cooperation between practicing physicians and dentists and the official health departments, local and state, and through these the health agencies of the federal government. An interesting example of cooperation between health officers and physicians is a series of meetings in the state of Georgia[1] sponsored by the several county medical societies and the county boards of health, with the U. S. Public Health Service cooperating through the Georgia Department of Public Health. Ten cities were chosen for these meetings: Rome, Washington, Americus, Thomasville, Griffin, McRae, Waycross, Swainsboro, Lagrange and Gainesville. The meetings brought to the rural practitioner in all parts of the state the latest information on the four subjects syphilis, the infant, obstetrics and laboratory aids. Through such discussion of common interests in public health, understanding is furthered and progress is made. These are friendly meetings. "Family Gatherings" is the name which *Georgia's Health* gives them and at the head of the program is the friendly invitation "Come Let Us Reason Together."

1. Georgia's Health **19**: 3 (Jan.) 1939.

ORGANIZATION SECTION

HEALTH INSURANCE WITH MEDICAL CARE: THE BRITISH EXPERIENCE

A Letter from Sir Henry B. Brackenbury With a Reply

To the Editor:—I have read the book by Dr. D. W. Orr and Mrs. Orr entitled "Health Insurance with Medical Care: the British Experience." I have read also your review of that book in THE JOURNAL of December 10 last. Any author submitting his work for review must be prepared to accept the consequences provided that criticisms are honest and well informed. I have no brief for these authors. I have never met them. But as their book appears to me to be the truest "evaluation of the medical service given under health insurance" in Great Britain (to use your own description of what should be the aim of a work of this kind) that has been written for American readers, and as your review appears to me to be widely mistaken in its facts and not fair in its comments, perhaps you will allow me to make a few frank observations. I do this as one who himself worked as a full insurance medical practitioner for the first sixteen years of the operation of the system, who has continued to be associated, both clinically and administratively, with the system till the present time, and as one who has never hesitated to call attention from time to time to certain deficiencies which are freely admitted and has perhaps had some part in the rectification of several of these. I speak now of the system as it has been operating during recent years; and I am concerned only with the picture presented of its methods and effects in Great Britain and not at all with the question of its applicability to America.

The main items of your indictment of the authors are: (*a*) that they have sought the opinion of inappropriate and biased members of the profession only, (*b*) that they have accepted favorable opinions while ignoring what you regard as notorious facts which are unfavorable, (*c*) that they have had improper regard to the opinions of insured persons as to the way in which the system affects them, (*d*) that in the bibliography there is a "complete omission" of books, reports and pamphlets which tell against their conclusions. This would be a damning indictment if true; but let us consider it.

In the main the medical practitioners consulted by the authors were those who have had considerable experience as doctors in the insurance service or as administrators of that service. Many of them have had both. I should have regarded such experience as a valuable qualification for the expression of an opinion; not, as you regard it, as a criterion of unreliability. I suppose you adopt the principle of the proverb "observers see most of the game." But this is very often not true; and it is the opposite of the truth if the observers know little or nothing of the nature of the game or of the rules under which it is played. There is unfortunately no consultant and specialist service under the British insurance scheme (except indirectly to a very limited extent), and in consequence many of the most eminent members of the profession have no practical knowledge of its working at all. Some consultants, however, have interested themselves in its administration from the medical side. I have never heard from such a consultant an opinion adverse to the scheme as a whole. Of course it is possible to find a few individuals among the doctors working the scheme who dislike it. Dr. and Mrs. Orr found one among the relatively few whom they interviewed. But why should you view with suspicion, and characterize as untrue, the general and collectively expressed opinion of some 20,000 doctors who know from their personal experience what they are talking about?

The charge that the authors have ignored the facts which are not in harmony with their conclusions is refuted to some extent in your own review. In at least two instances you point out that, having quoted certain statements of their informants, they go on to give facts which are not in harmony therewith and to express their own opinion that these statements at least require serious modification. Again, I should have thought that, in any impartial review, this would have been counted to them for righteousness, not thrown up against them as contradictory. You proceed, however, to point to two matters in which you allege that your charge is true; one relates to excessive prescribing due to the whim or to the pressure of patients, the other to attendances at the outpatient departments of hospitals.

As to the former, in spite of my long experience, I know nothing of the "continuous flood of letters sent out by regional medical officers" with regard thereto, nor of the "many complaints in official reports, including those of the Ministry of Health, of excessive prescribing . . . to satisfy the demands of the patient." As to the latter, I have never once heard it said that "the repeated appeals for financial aid for hospitals were largely due to the increased burden created by national health insurance," a statement which you allege is "continuously" made. There is no restriction on the ordering of "proper and sufficient" medicines for an insured patient. If there are some prescribers who, either through inexperience or through being unduly influenced by the advertisements of wholesale druggists, order expensive preparations when an official one from the British Pharmacopeia, the British Pharmaceutical Codex or the National Formulary would be equally efficacious and less costly, and if the attention of such prescribers is drawn to this fact, that is a merit, not a demerit, of the system: and even in such cases the practitioner is always given the opportunity of showing that in the particular instance the more expensive preparation was necessary or desirable. After careful investigation it is quite clear that the "waiting lists" of a number of hospitals are due to causes almost entirely unrelated to national health insurance, and so

far as it may be true that the system has led to the discovery of the need of many insured patients for a course of really specialist treatment or to a realization by their dependents of the desirability of early medical attention for which they are unable to pay their own doctor, this is surely an indirect effect of the system which is beneficial, not detrimental.

With regard to the authors having sought the opinions of insured persons themselves, your remarks appear to be either obscurantist or irrelevant, yet this you describe as your "sharpest criticism." Your parallel with the "thousands of testimonials to the efficiency of the panacea" produced by a "distributor of nostrums" does not hold. The gravamen of the charge against the insurance system is that it produces perfunctory medical attendance and that insured persons do not get a square deal as regards interest and attention from their doctors. Knowledge, skill and therapeutic results doubtless vary from doctor to doctor, for it must be remembered that all insurance practitioners are private doctors also. A novel and valuable feature of the investigation by Dr. and Mrs. Orr is the conclusion, from the mouths of insured persons themselves, that this charge (with doubtless a few individual exceptions) is untrue. It is well known to be so both by doctors and by the officials of Approved Societies in Great Britain.

Finally, what are these books and reports which have been deliberately omitted from the bibliography because they do not bear out the opinions of the authors? I do not mean publications written during the earlier years of the national insurance service: nor those which merely criticize some detail of the service or point out some particular imperfection. I mean such as may be said to condemn the whole system in general or in principle, or, in the words of your review, "contradict many of the conclusions of the book as to the character of the service given." I assert quite definitely that neither of the reports which you specifically mention does anything of the kind.

Let me not be misunderstood. There are still admitted imperfections in the detailed working of the system, but these, like others of more importance that have already disappeared, can be got rid of by negotiation. There are deficiencies: its scope needs extending in several directions. There are some practitioners whose work is less efficient than might be desired: there are perhaps a few who have accepted more responsibilities than they can well undertake together with their noninsurance practice. Further, I agree that it is impossible to estimate, even approximately, how far national health insurance has contributed to the manifest betterment of the public health that has taken place during the past twenty-five years, since so many other favorable factors have been at work; and any comparison in this connection between America without such a service and Great Britain with one, appears to be entirely irrelevant to the issue with which I have been concerned in this letter.

Yours faithfully,

HENRY B. BRACKENBURY
30 West Heath Drive,
Hendon, N. W. 11,
England.

This letter was referred to the Bureau of Economics of the American Medical Association, which makes further comments:

To the Editor:—We take this up in the order in which it is written:

(*a*) "That they have sought the opinion of inappropriate and biased members of the profession only." There is no statement that these are inappropriate and biased but that only those who were in favor of the scheme were consulted. The book speaks for itself on this subject—in that the authors apparently found only one critic. Yet the files of the *British Medical Journal* for Sept. 12, 1936, for Oct. 17, 1936, and for July 24, 1937, and the *Birmingham Medical Review* for June 1935 are sufficient evidence that there are a number of physicians who denounce this system in stronger language than that used in the review or than has ever been used in the THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Quotations from physicians who have practiced under the panel system and later gone to other countries, and who give similar opinions, may be found in the *Canadian Medical Association Journal* for February 1938, pages 188-189, and the *South African Medical Journal* for Oct. 28, 1933; the *British Journal of Tuberculosis* for April 1934 is another illustration.

(*b*) "That they have accepted favorable opinions while ignoring what you regard as notorious facts which are unfavorable." While here, as with the other statements, it might be pleaded that the indictment does not represent the position of the review, it is true that there is no reference in the Orrs' book to excessive prescribing, to lack of preventive activities, to an increase in morbidity, to restrictions on prescribing (which will be mentioned later), to lack of postgraduate training, to the separation of medical service into two classes, and to the necessity of a young physician buying his opportunity to start a practice.

(*c*) "That they have had improper regard to the opinions of insured persons as to the way in which the system affects them." Will Sir Henry claim that the lay public is capable of judging the efficacy of a medical service when it has no opportunity for comparison with other services and no technical training? Just how does this sort of an opinion differ from the testimonials offered by quacks as proof of the satisfactory character of their services?

(*d*) "That in the bibliography there is a 'complete omission' of books, reports and pamphlets which tell against their conclusions." The review itself lists some of these documents; others are listed in this comment.

Sir Henry objects to the statement as to "excessive prescribing due to the whim or the pressure of patients." The *British Medical Journal* for March 1, 1930, page 405, in commenting on a statement in the Report of a National Advisory Committee to the effect that "the insured person would have the right of complaint against the insurance practitioner under article 32 of the Medical Benefit Regulations, 1928, for refusing to prescribe an alleged drug," says:

If (as the committee now appears to lay down) "any question" is to be regarded as including the right of a patient to have given to him, or prescribed to him, the drug or preparation

which he thinks he ought to have, irrespective of whether the practitioner thinks it appropriate or not, the medical profession could not for a moment countenance the right of an insured person to raise any such question. The word "refusing" seems to imply a "demanding" on the part of the patient. It would be a topsy-turvy kind of medical practice in which the patient named the drug and the doctor obediently prescribed it, or, greatly daring, declined to do so.

As to the complaints against excessive prescribing, see the Report of the Chief Medical Officer for 1935 in the January 1937 issue of *Public Health* and the Eighteenth Annual Report of the Ministry of Health, 1936-1937, page 187.

As to the statement that there is no interference with prescribing, the Report of the Ministry of Health mentioned in the preceding paragraph (page 189) says: "Regional Medical Officers paid 891 visits in 1936, compared with 840 in 1935, to doctors whose prescribing appeared to call for explanation." (The statement in the review regarding the mass of letters written was based on statements made to the reviewer personally and files of letters shown to him by the Regional Medical Officer of Birmingham in 1931.)

The reviewer has investigated health insurance in Great Britain and has traveled from Glasgow to London by automobile, during which time he repeatedly saw the sign-boards of hospitals along the road asking for assistance and was repeatedly told by people in various parts of England that there was an increased burden on the hospitals because of the tendency of panel physicians working on a per capita payment plan to send many cases to the hospital, where, incidentally, the panel physician usually was not allowed to practice. A Canadian physician, who was a former panel practitioner, writing in the *Canadian Medical Association Journal* for February 1938, said: "The busy panel practice resolves itself into a 'clearing station.' The only major decision made is whether the patient is really ill or not. If he is really ill he is sent to the local hospital, and the expense and responsibility are shifted to that quarter. If he is not considered to be really ill some of the panel prescriptions will be prescribed." (See also the following statement from Report on the British Health Services, by P E P, page 162: "The panel doctor, at any rate in large towns, often has neither the facilities nor the equipment which, as precise diagnosis becomes daily more possible, are necessary to provide an adequate service. As a result he passes on his patients to the hospital and specialized clinics and often enough he tends to become little more than an agent for signing certificates.")

It is not universally agreed that "the system has led to the discovery of the need of many insured patients for a course of really specialist treatments"; this statement is not borne out by many of the other criticisms, including the complaints of those concerned with the cure of tuberculosis that delay in discovering this disease exists to an extent fully equal to that about which a similar complaint is made in the United States.

There is no charge that the books omitted "condemn the whole system in general," but they do, as stated, contradict many of the conclusions of the Orrs' book as to the character of the service given.

Complaint of the lack of preventive measures is found in the Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1937 "On the State of the Public Health," pages 53-55. Reference is made in the review to some of the reports that describe the steady increase in morbidity as recorded in days during which a benefit was received for incapacity to work and the over-medication previously mentioned. Sir Henry repeats the now familiar objection to any comparison of vital statistics as "entirely irrelevant to the issue." Perhaps he is not aware that the advocates of health insurance for years quoted often inaccurate and distorted vital statistics to bolster up their claim that health insurance had a favorable effect on morbidity and mortality statistics. Now that it has been definitely shown that the comparison of such statistics at almost every point fails to show any superiority of insurance countries, we are constantly assured that such comparisons are unjustifiable.

As appropriate to this discussion, attention might also be called to the strenuous opposition that is being raised by the branches of the British Medical Association in Australia and New Zealand to the introduction of health insurance in those countries and to the fact that they fail to have their opinions changed by the arguments offered by Sir Henry on his recent visits to those countries. It would seem that physicians in the British Commonwealth of the Nations would probably be sufficiently familiar with conditions in the home country to render them especially competent to draw accurate conclusions as to the desirability of the British system as compared with the system of private practice in Australia and New Zealand.

The charge of bias is based primarily on the continuously applied and sometimes directly stated claim that there are practically no criticisms by panel physicians—a statement that is disproved by the quotations in the medical journals to which reference is previously made. The question is not raised as to books that "condemn the whole system in general," because no one disputes the fact that the vested interests—financial, professional and political—created by the system of health insurance have made any attempt at abolition of the system hopeless. There is also full recognition of the fact that the British Medical Association is engaged in a splendid effort to make health insurance work, and certainly the reviewer would not criticize that effort. It is believed, however, that the attempt "to sell" the British system to America by one-sided presentation of its character is something against which the medical profession in the United States should protest. In other words, the reviewer takes the same stand which Sir Henry takes in his quotation and endorsement of the Memorandum of Evidence submitted on behalf of the British Medical Association to the Royal Commission on National Health Insurance, where he says:

> The organization of a National Health Insurance scheme is not necessarily, or even probably, the best means of utilizing limited resources for the promotion of national health. It is more than likely that there are a number of other directions in which, severally or collectively, a corresponding expenditure would produce an even more satisfactory return.

The medical profession in America has simply maintained "that there are a number of other directions in which, severally or collectively, a corresponding expenditure would produce an even more satisfactory return"; apparently the physicians of Australia and New Zealand agree.

LEGISLATION OF INTEREST TO PHYSICIANS CONSIDERED BY STATE LEGISLATURES IN 1938

Prepared by T. V. McDavitt of the Bureau of Legal Medicine and Legislation

(Continued from page 556)

IV. LEGISLATION REGULATING THE DISTRIBUTION OR POSSESSION OF FOODS, DRUGS, COSMETICS AND BIOLOGICS

NARCOTICS.—The uniform narcotic drug acts in force in Louisiana and New Jersey were so amended this year [92] as to make cannabis or marihuana a narcotic drug within the meaning of the act. The New York uniform narcotic drug act was so amended this year [93] as to define cannabis to include "the following substances under whatever names they may be designated: (*a*) the plant, its leaves or tops of the plant Cannabis sativa L., from which the resin has not been extracted, (*b*) the resin extracted from such plant, and (*c*) every compound, manufacture, salt, derivative, mixture or preparation of such resin, or of such plant from which the resin has not been extracted."

An amendment [94] to the Massachusetts Narcotic Drug Act raises to ten years from five years the term of imprisonment that may be imposed on a person convicted of unlawfully selling, delivering, furnishing, giving or exchanging a narcotic drug or possessing a narcotic drug for such purpose.

A new Mississippi law [95] amends the law relating to marihuana with respect to the circumstances under which a warrant may issue to search premises on which violations of the law are suspected of being perpetrated.

A bill was killed in Indiana [96] to make it unlawful to sell or otherwise distribute any commodities intended for smoking in which there is any Cannabis indica. The bill also proposed to make it unlawful for any person to possess or smoke cigarets, cigars or tobacco or other commodities intended for smoking containing any of the drug mentioned.

An unsuccessful attempt was made in Mississippi [97] so to amend the uniform narcotic drug act as to prohibit the distribution of barbituric acid compounds except on the written prescription of a licensed physician, dentist or veterinarian.

Unsuccessful attempts were made in New Jersey [98] to create a state bureau of narcotic control to supervise the use of narcotic drugs in the state, to license persons to sell, distribute or dispense narcotic drugs at wholesale or retail and to enact such regulations as may be necessary to accomplish those purposes.

BARBITURIC ACID DERIVATIVES.—Unsuccessful attempts were made in Mississippi [99] to prohibit the retail sale or distribution of barbituric acid compounds except on the written prescription of a licensed physician, dentist or veterinarian. The legislature of South Carolina reacted unfavorably to attempts [100] to repeal the law enacted in 1937 prohibiting the retail sale or distribution, except by virtue of the prescription of a licensed physician, dentist or veterinarian, of the "synthetic drugs known as barbiturates and their compounds."

SULFANILAMIDE — DINITROPHENOL — DIETHYLENE GLYCOL.—A resolution adopted in Massachusetts [101] creates a special commission to investigate the desirability of legislation to prohibit, except on the prescription of a licensed physician, the sale of aminosulfamidobenzene, dinitrophenol or sulfanilamide. This commission was also charged with the duty of investigating the desirability of legislation prohibiting the sale of drugs containing as a solvent ethylene glycol, diethylene glycol or any derivative thereof, and legislation prohibiting the retail distribution of drugs, which if taken in whole or in part may cause death, unless the containers of such drugs have labeled thereon statements as to how much if taken at one dose would kill and the appropriate antidote.

BIOLOGICS.—A bill was killed in Massachusetts [102] to prohibit the distribution of vaccine or other virus, toxin, antitoxin or other serum, unless the container of such substance has affixed thereto a label stating the exact content of the virus or serum, the date when manufactured, the place of manufacture and the name of the manufacturer and a statement as to the specific disease against which it is claimed to immunize.

LIMITATION ON MANUFACTURE OR SALE OF NEW DRUGS.—Bills were killed in Georgia [103] to prohibit the sale, dispensing or distribution in the state of any new drug until the drug should first have been tested chemically by the state chemist and its medical value approved by him and the director of the state department of health. A similar bill was likewise killed in Mississippi.[104]

FOODS, DRUGS, COSMETICS AND THERAPEUTIC DEVICES.—Extensive amendments to the existing state pure food and drug act were adopted in Virginia.[105] Among other things, the new law provides that the term "drug" includes all substances and preparations recognized in the official United States Pharmacopeia, official Homeopathic Pharmacopeia of the United States, or official National Formulary, or any official supplement to any of them, and all substances and preparations intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in man or other animals and all substances and preparations, other than food and cosmetics, intended to affect the structure or any function of the body. The new law also brings "cosmetics," defined as "all substances and preparations intended for cleansing, or altering the appearance of, or promoting the attractiveness of, the person," within the purview of the act.

Bills to enact new laws prohibiting the manufacture, sale or distribution of adulterated or misbranded foods, drugs, cosmetics and therapeutic devices were considered and killed in Mississippi [106] and New York.[107]

V. BILLS AFFECTING HOSPITALS

A. Hospitals Generally

CONTRACTS FOR HOSPITALIZATION; HOSPITALIZATION INSURANCE.—Legislation to authorize the formation of corporations to provide on a "nonprofit basis" "hospital care" to their members and subscribers has already been discussed in this survey immediately following the introduction.

92. La., Acts, 1938, Act No. 82; N. J., Laws, 1938, c. 156.
93. N. Y., Laws, 1938, c. 457.
94. Mass., Laws, 1938, c. 321.
95. Miss., Laws, 1938, c. 352.
96. Indiana, first special session, H. 495-X.
97. Miss. H. 1076.
98. N. J. S. 140, A. 132.
99. Miss. H. 595, H. 1076.
100. S. C. H. 1439, H. 1570.
101. Mass., Laws, 1938, c. resolve 53.
102. Mass. H. 1407.
103. Georgia, first special session, H. 347-X, S. 74-X.
104. Miss. H. 595.
105. Va., Laws, 1938, c. 375.
106. Miss. H. 595.
107. N. Y. A. 364, A. 556.

PAYMENT BY STATE FOR CARE RENDERED INDIGENT PATIENTS.—The Mississippi law authorizing the payment by the state of bills of approved hospitals in the state for care rendered indigent sick persons was amended by two laws enacted this year. One new law[108] provides that if adequate hospital facilities are lacking in a county bordering on another state, an acceptable hospital in a contiguous county in the neighboring state treating an indigent resident of Mississippi may be recompensed by the state. The other law[109] states in detail the certificate that must be extended by a licensed physician and two other residents of the county in which the applicant for hospital care to be paid for by the state resides, which certificate must be procured on behalf of each indigent person cared for before the state will reimburse the hospital caring for him. The law also requires the state hospital commission, which administers the law, to report to the clerk of the chancery court monthly a list of persons in his county who have received hospital care under the act.

An unsuccessful attempt was made[110] so to amend the same law as to reduce the amount the state would reimburse hospitals for care rendered indigents to $1.50 from $2.50 a day for each indigent cared for.

Bills to provide a procedure whereby hospitals might be reimbursed by the state for treatment and care rendered indigent persons injured in motor vehicle accidents were rejected in New York.[111]

INSURING PAYMENT OF HOSPITAL BILLS.—The Virginia lien law was so amended this year[112] as to provide that if a personal injury results in death the lien of a hospital caring for the decedent can be asserted either against (1) a judgment or compromise accruing because of the injury and death or (2) the general state of the decedent, but not against both. A new New Jersey law[113] creates a lien in favor of state and county institutions and charitable institutions maintained in whole or in part by state or county funds, to which persons have been committed or admitted by virtue of title 30 of the Revised Statutes, against the property of persons confined there and receiving care and treatment. A new Louisiana law[114] requires any person who has received treatment in any of the charity hospitals of the state[115] for injuries which might entitle him to damages or compensation and who files suit for the recovery of such damages or compensation to cause a copy of the petition in any such suit to be served on the hospital from which he received treatment.

A bill was killed in Rhode Island[116] to grant hospitals rendering services to persons injured through the negligence of others liens on all rights of action, recoveries, judgments or settlements accruing to the injured persons by reason of their injuries.

An unsuccessful Virginia bill[117] proposed that the proceeds of a judgment based on a wrongful death should be paid to the personal representative of the decedent, and after the payment of the cost of suit and reasonable attorney's fees there should be paid the charges of hospitals, physicians and nurses incurred during the last illness of the decedent but not to exceed $200 in the case of the hospital and $50 to each such physician and nurse. The New Jersey legislature failed to act on a bill[118] which proposed that in the distribution of the assets of an insolvent decedent hospital charges and expenses for the last illness should be on a par with judgments entered against the decedent in his lifetime, funeral charges and expenses, and physicians' and nurses' bills during the last illness and should have precedence over all other claims.

LICENSING OF ALL PRIVATE HOSPITALS.—An unsuccessful Massachusetts bill[119] proposed to prohibit the operation of private hospitals except by virtue of a license issued by the department of public health, which was to be empowered to make rules and regulations for the operation of such institutions.

HOSPITAL EMPLOYEES.—A resolution was adopted in Massachusetts[120] which requires the department of labor and institutions and the department of public health to conduct an investigation relative to the hours of labor of women and children in hospitals.

Bills to limit the hours of employment in hospitals of all employees, male or female, to not more than eight hours in any one day, nor more than forty-eight hours in any calendar week were killed in two states.[121]

REQUIRED REPORTS.—A new Louisiana law[122] requires the person in charge of a hospital who has first knowledge of a death occurring suddenly, accidentally, by violence, under suspicious circumstances, or from abortion to notify the appropriate coroner and district attorney.

Bills to require hospitals to report to specified authorities in the instances noted were killed in Massachusetts and New Jersey. The bills in Massachusetts[123] would have required a report when caring for a case of induced abortion. The New Jersey bills[124] would have required a report when any person admitted was found infected with venereal disease, one bill[125] even going so far as to propose to require a hospital to subject every patient admitted to a Wassermann or other approved blood test for the detection of syphilis.

ADMISSIBILITY OF HOSPITAL RECORDS IN EVIDENCE.—A new Louisiana law[126] provides that whenever a certified copy of the chart or record of either of the charity hospitals of the state is offered in evidence in court it is to be received as prima facie proof of its content.

MISCELLANEOUS.—An unsuccessful attempt was made in Massachusetts[127] to require the state department of public health to furnish not less than two oxygen tents to each hospital in cities of 30,000 or more population, to be used without charge on patients whom the board of health in such city or town deems needy. Another unsuccessful Massachusetts bill[128] proposed to establish a hospital lottery commission which was to be authorized to permit any hospital in the state to conduct a lottery under such plan and subject to such rules and regulations as might be adopted by the commission. Bills were rejected in New York[129] to require hospitals to permit a patient's attorney to inspect all hospital records relative to the patient. An unsuccessful attempt was made in Massachusetts[130] to require any chartered hospital in the state to accept any patient when requested to do so by a licensed physician. An unsuccessful Mississippi bill[131] proposed to make it unlaw-

108. Miss., Laws, 1938, c. 327.
109. Miss., Laws, 1938, c. 267.
110. Miss. S. 375.
111. N. Y. A. 492, A. 1666, S. 1311.
112. Va., Laws, 1938, c. 374.
113. N. J., Laws, 1938, c. 239.
114. La., Acts, 1938, Act No. 289.
115. It is not clear whether this refers merely to the so-called state charity hospitals or to any charitable hospital in the state.
116. R. I. S. 40.
117. Va. H. 177.
118. N. J. A. 387.
119. Mass. H. 1298.
120. Mass., Laws, 1938, c. 45.
121. N. J. A. 236; N. Y. A. 351.
122. La., Acts, 1938, Act No. 366.
123. Mass. H. 1106, H. 1528.
124. N. J. A. 591, S. 168.
125. N. J. S. 168.
126. La., Acts, 1938, Act No. 90.
127. Mass. H. 1529.
128. Mass. H. 161.
129. N. Y. A. 705; S. 880 (vetoed by governor).
130. Mass. H. 1194.
131. Miss. H. 364.

ful for any hospital to assign any nurse not a graduate or registered nurse to a special case unless the nurse receives the compensation paid for the nursing care rendered.

B. Governmental Hospitals

STATE HOSPITALS FOR THE TREATMENT OF TUBERCULOSIS.—A new Indiana law[132] authorizes the establishment of a state hospital for the treatment of tuberculosis, to be known as the Southern Indiana Tuberculosis Hospital. The law specifically provides that the governing board of the hospital, staff members and other employees shall not be subject to any suit or claim for malpractice for care or treatment rendered therein.

An unsuccessful attempt was made in Virginia[133] to appropriate $250,000 for the erection and equipping in Southside of a sanatorium for the treatment of tuberculosis.

STATE CANCER HOSPITALS.—A law was adopted in Rhode Island[134] which authorizes the governor to appoint a commission of five, not less than three of whom must be medical practitioners, who, together with the director of public welfare and the director of public health, are to make a thorough study and investigation as to the advisability of establishing a cancer hospital at the state institution at Howard. This commission is to report to the general assembly not later than Feb. 1, 1939, the results of that study and make such recommendations as it may deem proper.

An unsuccessful attempt was made in New York[135] to authorize the establishment of three state hospitals for the care and treatment of persons afflicted or threatened with cancer or allied diseases.

STATE HOSPITALS FOR THE TREATMENT OF INFANTILE PARALYSIS.—Unsuccessful attempts were made in Massachusetts[136] to provide additional facilities for the treatment of persons crippled by infantile paralysis or other crippling conditions. One bill sought the construction of a health center adjacent to Buzzards Bay while the other sought a 100 bed ward in the Lakeville State Sanatorium.

STATE HOSPITAL FOR TREATMENT OF CRIPPLED CHILDREN.—A law was adopted in Louisiana[137] directing the state hospital board and the state board of health to establish and operate a "hospital, bath houses and other necessary and/or incidental facilities at Hot Wells, Louisiana, for the care and treatment of crippled children and/or the care and treatment of the indigent and destitute."

COUNTY GENERAL HOSPITALS.—Authority was given for the holding of an election in July 1938 in York County, S. C., in which the electorate were to be given the chance to approve or disapprove the question of issuing a bond issue of $175,000 for constructing and establishing a county general hospital. The staff of this hospital, if it is established, is to consist of all licensed physicians residing in the county.[138]

COUNTY TUBERCULOSIS HOSPITALS.—A new Mississippi law[139] authorizes one or more counties, separately or jointly, to establish, maintain and operate a "tubercular" hospital. A South Carolina law[140] empowers the counties of Dillon, Horry and Marion, or one or more of them, to contract with the Florence-Darlington Tuberculosis Commission for the erection and operation of a hospital for the care and treatment of residents of the counties indicated afflicted with tuberculosis.

COUNTY MATERNITY HOSPITALS.—A new New Jersey law[141] authorizes the board of chosen freeholders of any county of the first class to establish and operate a maternity hospital.

CLINICS FOR THE TREATMENT OF VENEREAL DISEASES.—A new South Carolina law[142] requires the county health department of Greenville County to operate a "venereal clinic" to render services free of charge to those unable to pay and to require those persons able to pay to pay a reasonable charge for the services.

An unsuccessful attempt was made in Massachusetts[143] to authorize the department of public health, either alone or with the cooperation of local boards of health, hospitals, dispensaries or other agencies, to establish clinics throughout the state to provide treatment for persons suffering from gonorrhea or syphilis.

VI. WORKMEN'S COMPENSATION LEGISLATION

So far as can be ascertained, no workmen's compensation legislation of interest to the medical profession was enacted in 1938. The following are the more important legislative proposals which failed of enactment: A Massachusetts bill[144] to limit the right of a worker to select his own physician by requiring him to select a physician from a list established by the department of industrial accident, which, however, was to be required to list all physicians applying for such listing; a Rhode Island bill[145] to provide compensation for silicosis and asbestosis contracted in the course of an employment; a New Jersey bill[146] to make it less difficult for a workman to establish the fact that a hernia resulted from an industrial accident; bills in Rhode Island[147] and Virginia[148] to require the employer to furnish reasonable medical, dental and hospital services and medicines to an injured employee without limit as to amount or time; a Kentucky bill[149] to limit an employer's liability for medical and hospital services to the first six months after an industrial accident and to $200 in amount, reserving in the compensation board, however, the right to order an extension of the period of treatment or of the limit of expense; a New York bill[150] to require an employer to provide an injured workman with such dental care as might be necessary to restore him from the effects of an industrial accident, and other New York Bills[151] proposing in general to limit the right of hospitals and employers to employ physicians on a salary basis to treat injured workmen.

VII. MISCELLANEOUS LEGISLATION

COMPULSORY HEALTH INSURANCE; SOCIALIZED MEDICINE.—A new New York law[152] creates a state commission to study and recommend ways and means for minimizing risks of illness through the extension of public health services; for furnishing adequate medical care for persons of low income, the cost to be met from public funds; for making public funds available for the support of medical education and for studies; for raising the standards of medical practice; for medical care to the indigent; for using private institutions in allocating

132. Ind., Laws, 1938, c. 2.
133. Va. S. 45.
134. R. I., Laws, 1938, c. ——, approved Feb. 7, introduced as H. 629; c. ——, approved March 17, introduced as S. 86.
135. N. Y. A. 2261.
136. Mass. S. 359, H. 1531.
137. La., Acts, 1938, Act No. 220.
138. S. C., Acts, 1938, Act No. 1268.
139. Miss., Laws, 1938, c. 299.
140. S. C., Acts, 1938, Acts No. 1162.
141. N. J., Laws, 1938, c. 425.
142. S. C., Acts, 1938, Act No. 1200.
143. Mass. H. 1300.
144. Mass. H. 1043.
145. R. I. S. 239.
146. N. J. A. 80.
147. R. I. H. 748.
148. Va. H. 130.
149. Ky. H. 31.
150. N. Y. A. 2329.
151. N. Y. S. 1119, A. 1551.
152. N. Y., Laws, 1938, c. 682.

public funds for the rendition of medical services to the public; for effecting adequate administration and supervision of the health functions of the state government, and, if deemed advisable, for consolidating under a separate department all federal and state health and medical services and activities. This commission is to report to the legislature before Feb. 15, 1939.

The legislature of New York failed to act on two other proposals, which if adopted would have tended to socialize the practice of medicine. One bill[153] would have authorized the state department of social welfare to supply to all married persons having an income of less than $1,200 annually and all single persons having an income of less than $900 annually necessary medical, dental and hospital services free of charge. The bill proposed that the medical services be rendered by such licensed physicians, dentists, nurses and hospitals as would agree to render services in such manner as the medical assistance board, which the bill proposed to create, would designate. The other New York bill[154] proposed to authorize the state department of health to render free of charge to all inhabitants of the state "all medical, surgical, dental, nursing care and treatment and all other services and facilities known to science and designed or adapted for use in all cases of sickness, accidents and childbirth . . . maintenance in hospitals, the furnishing and supplying without cost of medicines, drugs," and all other necessary equipment and supplies. The bill proposed to increase the staff of the department so as to include all registered physicians, dentists, pharmacists, technicians, research and laboratory workers and all other persons practicing allied professions who elected to serve and to pay them salaries in accordance with the schedule fixed in the bill. The department was to be authorized to exercise exclusive control over all public hospitals and was to have complete supervisory powers over all private hospitals and the staff, officers and employees thereof.

Proposals to enact compulsory health insurance schemes were rejected in Massachusetts,[155] New York[156] and Rhode Island.[157] These bills proposed a system of compulsory and voluntary sickness insurance, the benefits of which were to consist of cash and all forms of medical, dental and hospital services.

TREATMENT FOR INFANTILE PARALYSIS AND OPHTHALMIA NEONATORUM AT PUBLIC EXPENSE.—The governor of New York vetoed a bill[158] to require local boards of health and health officers to provide suitable surgical, medical and hospital treatment and care to persons infected with or exposed to infantile paralysis. Two unsuccessful attempts were also made in New York[159] to require the district state health officer in whose jurisdiction a case of ophthalmia neonatorum occurred to provide hospital, medical and special nursing care.

PNEUMONIA CONTROL PROGRAMS.—A new New Jersey law[160] appropriated $25,000 to the state department of health for the fiscal year ending June 30, 1938, to be expended in the purchase and distribution of type I and type II pneumonia serum, to be available free of cost to persons afflicted with pneumonia and financially unable to purchase the necessary serum. A supplement to this law appropriating an additional $10,000 for the fiscal year ending June 30, 1939, was also enacted.[161]

A bill failed of enactment in Virginia[162] which proposed to direct the state board of health to establish a statewide collapse therapy program to be made available to all tuberculosis patients in need of such treatment. Such program is to include facilities for pneumothorax and for surgical procedures, including phrenic nerve operations, pneumolyses and thoracoplasties in all public hospitals or institutions. The state board of health is further directed to establish a statewide follow-up program for tuberculosis patients including the continuance of pneumothorax of all marginal and indigent patients without cost to them and to provide for the giving of such treatment by private physicians, who are to be paid by the state.

MARRIAGE REQUIREMENTS.—Laws to require, as a condition precedent to the issuance of marriage licenses, that both parties to the proposed marriages present certificates from physicians that they are free from stated venereal diseases, were enacted in Kentucky,[163] New Jersey,[164] New York[165] and Rhode Island.[166] The Kentucky and Rhode Island laws require freedom from all venereal diseases, while the New Jersey and New York laws require freedom only from syphilis. The Rhode Island law in addition requires freedom from tuberculosis in the infectious stages. The certificates of the physicians under all four laws must be based on standard laboratory tests and also in Kentucky and Rhode Island on physical examination. All the laws referred to, except the Kentucky law, are now in effect. The Kentucky law does not become effective until March 1, 1940.

Unsuccessful attempts were made in five states[167] to require a physician's certificate as to freedom from stated venereal diseases with respect to both parties to a proposed marriage as a condition precedent to the issuance of marriage licenses.

A resolution adopted in Ohio[168] authorizes the establishment of a special commission to make a study of the prevention of congenital syphilis and of the prevention of the spread of venereal disease through marriage by requiring an antenuptial physical examination to determine the presence of a venereal disease before a license to marry is granted by the probate court.

VENEREAL DISEASES.—Unsuccessful attempts were made in Georgia[169] and Louisiana[170] to amend existing laws relating to venereal diseases so as to authorize appropriate local health authorities to examine persons infected with or reasonably suspected of being infected with venereal diseases, to quarantine such persons and to require such persons to submit to treatment until cured. A New Jersey bill,[171] which failed of enactment, proposed to require a person infected with a venereal disease to consult at once a licensed physician or any hospital or clinic maintained for the treatment of such diseases. The bill also proposed to require hospitals to subject every patient to a Wassermann or other approved blood test for the detection of syphilis. The Georgia and New Jersey bills referred to also proposed to require a physician treating a patient for venereal disease to notify stated health authorities. Other proposals with respect to venereal disease are considered in the section immediately following.

PHYSICAL EXAMINATION OF FOOD HANDLERS OR DOMESTIC SERVANTS.—A law enacted in South Carolina[172] prohibits the employment on and after Jan. 1, 1940, in Greenville County of a domestic servant unless the servant obtains a certificate from the county health department showing that he or she is either free from

153. N. Y. A. 2310.
154. N. Y. A. 2143.
155. Mass. H. 372.
156. N. Y. A. 35, S. 326.
157. R. I. H. 668.
158. N. Y. A. 287 (companion bill, S. 202, died in senate).
159. N. Y. S. 1718, A. 2125.
160. N. J., Laws, 1938, c. 24.
161. N. J., Laws, 1938, c. 430.
162. Va. S. 49.
163. Ky., Laws, 1938, c. 120 (similar bills also considered were H. 224, H. 44, H. 104).
164. N. J., Laws, 1938, c. 126.
165. N. Y., Laws, 1938, c. 640 (similar bills also considered were A. 124, A. 381, A. 2067, S. 784).
166. R. I., Laws, 1938, c. ——, approved March 29, introduced as H. 760 (similar bills considered were S. 10, H. 541, S. 103).
167. Ga. H. 248-X (first special session); La. H. 118; Mass. H. 555, H. 669; S. C. S. 1061, S. 1201; Va. S. 8, H. 9.
168. Ohio, Laws, 1938, c. ——, adopted June 16, introduced as H. Res. 178-XXX in the third special session.
169. Ga. S. 90-X (first special session).
170. La. H. 440.
171. N. J. S. 168.
172. S. C., Acts, 1938, Act 1200.

syphilis or under proper and adequate treatment for that disease. Servants must procure such a certificate annually thereafter.

A bill was killed in New York [173] to prohibit the employment as a domestic servant of any person with a communicable disease if such person in the course of his work would attend children or perform any work in connection with the handling of food. The bill proposed to require every domestic to submit within sixty days after the enactment of the bill to necessary medical examinations.

Bills were killed in four states [174] to require food handlers to be examined at least semiannually by licensed physicians and to prohibit a person from acting as a food handler unless possessed of a certificate from a physician that he or she is not infected with any venereal disease or other communicable disease.

BLOOD TRANSFUSIONS.—The Massachusetts legislature referred to its next annual session a bill [175] proposing a regulatory act for the use of blood for transfusion purposes. The bill would have banned the use of the blood of any donor who had ever had syphilis or questionable sexual intercourse within three months of the transfusion. Prior to the use of any blood the donor was to be required to submit to a serologic test and to a physical examination.

ASEXUALIZATION.—The legislature of New Jersey [176] rejected a proposal to authorize the sexual sterilization of all persons "likely to procreate idiot, imbecile or feebleminded progeny."

BLOOD GROUPING TESTS.—A new New York law [177] supplements the code of criminal procedure by providing that whenever it shall be relevant in any criminal proceedings to determine the parentage of any child, or the identity of any person or corpse, the court, on the motion of the defendant, shall order any party to such action and the person involved in the controversy to submit to serologic blood tests and the results thereof shall be receivable in evidence but only where definite exclusion is established. Such tests are to be made by physicians appointed by the court from a list of physicians certified by the state medical society.

An unsuccessful attempt was made in New Jersey [178] to provide for compulsory blood grouping tests in illegitimacy actions, the results of which would have been admissible in evidence or where definite exclusion was established.

VACCINATION.—A new Virginia law [179] authorizes local boards of health, in addition to rights previously possessed at law, to require, whenever they deem it necessary to prevent an epidemic, the compulsory administering of toxoid.

Two bills were killed in Massachusetts [180] which proposed to provide that no person should be required to submit to any form of vaccination or inoculation as a condition precedent to admission to any public institution. One of these bills [181] also proposed to prohibit the display or distribution in the public schools of medical or surgical advertising or propaganda.

EXAMINATION OF PUBLIC SCHOOL PUPILS.—A bill was defeated in New York [182] to require the semiannual examination of public school pupils by duly licensed psychiatrists and to authorize the commitment to a state institution of pupils found to be afflicted with a mental disability of such a type as would interfere materially with the instruction of other pupils. A bill was killed in New Jersey [183] to require medical inspectors, principals and teachers in charge of public schools to make at least annual eye and ear tests of pupils with such scientific devices as may be approved by the commissioner of education. The board of education of each school district was to be authorized to appoint specialists to make the required examinations.

MEMBERSHIP IN COUNTY MEDICAL SOCIETY CONDITION PRECEDENT TO RIGHT TO PRACTICE.—The Mississppi legislature again killed a bill [184] proposing to create in each county a county medical association and condition the right of a physician to practice on membership in the county medical association of the county of his residence. The association was to be in charge of all public health work in the county, and the rendering of care to the indigent sick was to be authorized to appoint from its membership a county health officer and was to be given full power to isolate and treat persons afflicted with infectious venereal disease for such times and under such restrictions as might be proper.

MISCELLANEOUS.—The following miscellaneous bills all failed of enactment: a New York bill [185] to pay $75 to the parents in every future case of legitimate childbirth; a Massachusetts bill [186] to require an applicant for a license to operate a motor vehicle "to furnish a written certificate, after an acceptable medical examination, showing physical and mental fitness with a favorable intelligence rating"; a New York bill [187] to make it the duty of school authorities to purchase and distribute to all pupils of kindergarten and primary grades such quantities of cod liver oil or a concentrate thereof of equal vitamin content as the school or private physicians may prescribe; a Rhode Island bill [188] to provide for the examination by a psychiatrist, to be provided by the department of public welfare, of every person indicted for an offense punishable by life imprisonment or who is indicted for any offense and had been previously indicted, and a New York bill [189] to create a state lunacy authority and subordinate local lunacy boards which were to make psychiatric, psychologic and psychametric examinations of all persons indicted for felonies and to report their observations to appropriate local courts. The state lunacy authority was to have power to review the findings of local lunacy boards and to examine inmates of a state institution for the insane or mentally defective prior to their release.

173. N. Y. A. 884.
174. Ky. H. 113; Mass. H. 606; Miss. H. 165, S. 445; Va. H. 173.
175. Mass. S. 40.
176. N. J. A. 405.
177. N. Y., Laws, 1938, c. 372.
178. N. J. A. 61.
179. Va., Laws, 1938, c. 340.
180. Mass. H. 855, H. 1301.
181. Mass. H. 1301.
182. N. Y. S. 647.
183. N. J. A. 235.
184. Miss. S. 331.
185. N. Y. A. 648.
186. Mass. S. 249.
187. N. Y. A. 976.
188. R. I. H. 617.
189. N. Y. S. 651.

SQUARE DEAL IN MEDICAL CARE

The National Dental Association and the National Nurses Association, in cooperation with Chicago organizations of Negroes engaged in the professions associated with medical care, have clearly stated their position concerning the medical program of the Interdepartmental Committee in a pamphlet entitled "A Plea for a Square Deal in the Administration of Medical Care in America." In its general outlines these organizations agree with the statement of the special session of the House of Delegates of the American Medical Association. However, they lay special emphasis on the fact that the program submitted by the Interdepartmental Committee tends to perpetuate some phases of racial discrimination. They ask that any action under recommendation II providing for the expansion of hospital facilities take note that the most significant shortage in hospital services is in the care for the Negro. Emphatic opposition is offered to "any system of compulsory health insurance."

The following comment under recommendation V—Compensation of loss of Wages During Sickness, is strikingly applicable to much of the discussion of the lack of medical care:

> Widespread education of the public . . . must be so strong as to make the people *want* and *will* to be healthy. "Health *cannot be bought;* it *cannot be given;* it *cannot be forced upon a people.*" It must be everlastingly worked for. The basis of health lies in proper habits of eating, sleeping, recreation, clothes, and sanitation of home and workshop. Disregard of any of these elemental fundamentals, regardless of all the medical care in the world, brings physical disability. *Health* is not a commodity; it is a condition achieved through individual education and effort, maintained by social cooperation. To us, it seems that its care depends on the highly trained technical medical professions, cooperating with, not dominated by, society.

OFFICIAL NOTES

ANNUAL CONGRESS ON INDUSTRIAL HEALTH

First Annual Meeting, Held in Chicago, Jan. 9 and 10, 1939

(Continued from page 550)

DR. H. H. KESSLER, Newark, N. J., in the Chair

TUESDAY, JANUARY 10—MORNING

Health and Safety Activities of the Federal Bureau of Mines

MR. DANIEL HARRINGTON, Washington, D. C.: The organic act establishing the Bureau of Mines was approved May 16, 1910. The act was amended in 1913. Both the original and amended acts indicated that health and safety of the mine workers constituted the chief function of the bureau. Soon after the creation of the bureau an arrangement was made with the United States Public Health Service by which doctors of that organization could cooperate with engineers of the Bureau of Mines in investigations to improve the health of persons engaged in the mining and allied industries. The bureau also employed doctors through the civil service, but about 1914 a fairly definite arrangement was made with the Public Health Service. At first the health work of the bureau was largely making surveys. The first study on a definite problem was in 1914 by Dr. A. J. Lanza and Edwin Higgins on silicosis in the Joplin, Missouri, region, followed in 1916 by a similar study in the Butte, Montana, region by Dr. Lanza and Daniel Harrington. In 1916 to 1920 field studies on dust and ventilation were conducted in coal and metal mines in mining localities in several states by engineers and doctors under the general direction of Mr. Harrington. In 1920 the position of chief surgeon was created and Dr. R. R. Sayers of the United States Public Health Service was appointed, after which the health work of the Bureau of Mines was devoted largely to the laboratory, though some field activities were continued. The Health Division, as such, was created in 1926 as one of the divisions of the Health and Safety Branch, with Dr. R. R. Sayers in charge, and laboratory work was done with gases and dusts. The work of the Health Division was recessed in 1933, when the funds of the Bureau of Mines were seriously curtailed, and was resumed in a limited way in 1935 with Dr. H. H. Schrenk in charge as chief chemist. The bureau has no legal authority to enter mines or other establishments or to enforce its recommendations as to health, safety or efficiency, the regulation of mining and other mineral industries being vested in the individual forty-eight states rather than in the federal government.

The Health and Safety Branch of the Bureau of Mines is essentially a service organization, though considerable research is done. The branch now has ninety-nine persons in its two divisions, eighty-two (twenty-nine safety instructors, twenty-eight engineers, eighteen clerks and seven others) in the Safety Division and seventeen in the Health Division. Members of the personnel of the Safety Division are stationed in seventeen states and do field work in nearly every state in the Union. The seventeen persons in the Health Division are stationed in Pittsburgh and in Washington, D. C. In its educational activities the engineers and safety instructors of the Safety Division annually come in contact with about 300,000 persons in the mineral industries. The first aid training work constitutes in some ways the most effective method of putting health and safety data before the mining industry, about 100,000 now taking the course annually. It is estimated that through it at least 200 lives are saved annually and that probably at least 10,000 nonfatal accidents are prevented. During the past fiscal year, first aid training was given in 790 mining communities in thirty-eight states, 102,698 persons receiving certificates for having completed the course.

In general, the mine worker in reasonably well conducted mines has almost ideal conditions as to temperature and humidity. The underground temperature at working places is usually around 60 F., with relative humidity around 80 or 90 per cent. In most mines the temperature of the working places varies little throughout the hour, day, week or year, though there are exceptions. Many deep mines have high temperatures, others have both high temperature and high humidity, and the workings of shallow mines are very likely to be affected by outside climate conditions, including also to some extent winds.

Coal mines generally have far better ventilation systems than are found in other types of underground operations. Most coal mines have fairly effective ventilating systems, and the chemical quality of the air is usually excellent. Ordinarily the oxygen content of the air of coal mine working places is over 20 per cent and carbon dioxide is less than 1 per cent. Every year, however, the Bureau of Mines finds scores of instances in which air in working places of supposedly well ventilated coal mines has oxygen below 20 per cent and carbon dioxide above 1 per cent or even as high as 2 or 3 per cent. Methane rarely is found in excess of 1 per cent in coal mine working places.

The air in metal or nonmetallic mineral mine working places is more likely to be deficient or contaminated than in coal mines. Neither the state laws nor considerations of protective expediency usually force them to install efficient ventilation systems.

By far the greater number of underground workers have dry surroundings in which to labor. The dry working places have both good and bad features. The much more pleasant working conditions in dry places carry with them far more health and safety hazards to the underground worker than do the wet places. The wet place may merely have water or mud on the floor, or water may fall through the air like rain, varying from a drizzle to a downpour. In certain lead ores the water may carry lead compounds in solution and lead poisoning may affect the worker. Under some conditions in copper mines, copper salts are dissolved in the water and the worker has what are termed "copper sores," and unless his feet are well protected from the water they may become too sore for walking. Where the water and air are cold, the worker is likely to be subject to respiratory trouble or he may have rheumatism. In wet mines having high temperatures the worker is likely to be afflicted from time to time with boils or to become weakened from too profuse perspiration or from undue heart strain, and in wet mines in climates with really cold winters, unless extraordinary precautionary measures are taken, the workers are likely to suffer undue exposure in wet clothing on coming to the surface. Thus while those in wet places in mines have some health hazards, they are likely to escape the scourge to which nearly every underground worker in dry mines or even in dry places in wet mines is subject, namely the dust hazard. In wet coal mines the worker has relatively little fear of the widespread coal dust explosion, nor does he need to fear that his lungs may become incapacitated through breathing finely divided dust particles in the air.

After more than twenty years of study of the engineering phases of dust disease in mining, I am of the opinion that breathing large quantities of relatively finely divided dust over long periods ultimately will be harmful to health. This includes not only silicious dust but also bituminous or anthracite coal dust or dust of iron ore, limestone, alumina or any other mine dust, or any or all combinations of those dusts. Moreover, the dust problem, at least in and around mines, both as regards health and safety in coal mining and as regards health in noncoal mines, should be almost entirely an engineering and operating problem. It now is used largely as a type of racket in which the victims of dust disease get little or no relief, financial or otherwise, yet the mine operators are harassed by lawsuits or foolish regulations. Moreover, well meaning but poorly informed law making bodies or investigation committees promulgate regulations or laws on dust disease, chiefly with reference to silicosis, when no definite data are available as to numerous essential factors. With decidedly limited knowledge of the actual underlying facts concerning the causation of dust disease, the only safe method of handling the problem at present is to accept the ideas that the long con-

tinued breathing of air containing large quantities of finely divided dust will almost certainly sooner or later have harmful physical effect and that the only known "cure" is the prevention or limitation of the occurrence of dust in mines. Dust disease is the greatest health menace to the miner, and many of our miners are obliged to breathe far too much fine dust. The outstanding remedy for this bad situation is education of mine workers in the necessity of taking such precautions as are available; of mine officials to recognize the seriousness of the situation and to provide equipment and methods to reduce or prevent the incidence of disease and, if necessary, to force their adoption on the miners; of the doctors to correctly diagnose dust disease, give publicity to its prevalence, its seriousness, and to preventive remedies, and in death certificates to assign miners' consumption or other dust disease as the cause when such is the case; and of the merchants, newspapers and other influences in the community in trying to prevent the disease rather than in hiding its existence.

The introduction of rock dust into coal mines to prevent or limit explosions is a long step in the right direction toward coal mine safety and, if done with judgment, need not introduce any additional health hazard into coal mines.

Sanitation in and around mines has been improved, but much remains to be done before the miner or his family can be said to work or live under up-to-date sanitary conditions. Sewerage conditions in general may be termed deplorable. In coal mines any attempt to remedy conditions as to sewage would be ridiculed by the workers as childish, though metal miners are inclined to react with some favor to rules or devices looking to improvement of underground sewerage conditions. The mines, with some exceptions, have not had sufficient assurance of stability of operation to justify the expenditure for really good sanitary conditions in mining communities; this includes sewers, city water system, concrete roads, lawns, brick or concrete houses with baths and other conveniences. Many fairly progressive mines have failed to provide a good usable type of wash house, though some mining companies have wash houses or "drys" that resemble palaces. Very likely it would not only pay well in the various kinds of satisfaction they bring to those who work in mines but also in dollars and cents if the companies would do far more than they have done to provide workers and their families better welfare and sanitation facilities.

As specific remedial measures for metal mines I would suggest mechanical ventilation, with some definite person in charge, to force moving currents of air to every place where men work to remove dust, heat and gases. The use of water should be enforced in every place where dust may be found. Where possible, the blasting should all be done after a shift; where this cannot be done there should be enforcement of strict regulations as to the wetting of the region of blasting both before and after the shots are fired, removal of all explosive fumes by adequate air currents, and prevention of entrance into a blasted place until all dust and fumes have been removed. There should be strict physical examination of mine workers before employment and at periods of not greater than six months during employment, with prompt removal from dangerous underground work should unfavorable physical symptoms be found.

The coal mining public, instead of "standing pat" and referring to out of date and often misleading foreign statistics that coal dust is harmless to health, should make an impartial, strict study of dust conditions in coal mines, paying particular attention to examination of the chest conditions. Coal camp doctors who have direct knowledge of the harmfulness of coal dust to underground workers should come forward with technical articles descriptive of the situation, and state and federal authorities and other interested agencies should cooperate in making studies and publishing results as to the health situation of workers in dusty places in coal mines.

A short paper cannot cover adequately the necessities in trying to evaluate the results and accomplishments of the Bureau of Mines in its health and safety efforts for the benefit of those engaged in the mineral industries. On the safety side some figures are available. During the five year period just previous to the creation of the Bureau of Mines 13,288 persons were killed in the coal mines of the United States, an average of 2,658 a year, and the fatality rate for this five year period was 5.89 persons killed per million tons of coal produced. The number killed in our coal mines in 1932 was 1,207, and the fatality rate per million tons of coal produced was 3.36; in 1933 there were 1,064 killed, a rate of 2.78; in 1934 there were 1,222 deaths, a rate of 2.93, and in 1935 there were 1,242 deaths, a rate of 2.93; tentative figures for 1936 indicate that 1,330 fatalities occurred, a fatality rate of 2.72, the lowest coal mining fatality rate on record; and tentative figures for 1937 show that there were 1,467 fatalities, a rate of 2.98. During the twenty-seven years of the Bureau of Mines, the coal mine fatality rate has been reduced sufficiently to indicate an average annual saving of life of more than 1,000 persons. If the cost of a life to the operator is considered at a relatively low amount, such as $5,000, irrespective of humanitarian considerations (and not considering nonfatal accidents) the annual saving of somewhat more than 1,000 lives may be considered as "worth" more than $5,000,000, or almost three times the amount being expended by the Bureau of Mines during the present fiscal year and nearly double the entire expenditure of the bureau for any year of its existence.

The financial losses that the workers have avoided through this increased safety of coal mine operation are colossal. The average age of the coal mine worker who is killed is about 35 years and, in general, he should have a future active working period of at least twenty years. In normal times he should earn at least $1,000 annually; in his twenty years' active life expectancy he would receive approximately $20,000 for his services. Hence the saving of the life of about 28,000 coal mine workers in the past twenty-seven years through a decreased death rate in coal mining has prevented a financial loss to them of at least $560,000,000, and this does not take into consideration the financial losses saved to the worker through the elimination of large numbers of nonfatal accidents.

The foregoing detailed facts about coal mining are more or less similar to safety conditions in the other phases of mining and allied industries, including metal mines, nonmetallic mineral mines and the petroleum industry, all of which still have a relatively high rate of accident occurrence, though much progress has been made in the past six years.

The beneficial effects of the health work of the bureau can by no means be as readily shown statistically as can the effects of its safety work; but definite information can be given not only as to the effect on workers but also as to protective or preventive methods, devices and procedures. The work of the bureau with respiratory protective equipment is outstanding; its early work in dust constitutes the basis of information and teaching on these matters today in industrial work; numerous other accomplishments of a fundamental character could be mentioned. The subject of health in mining, however, has not been given nearly the attention it warrants. It is almost certain that far more underground workers are incapacitated or die annually from the breathing of excessive amounts of dust than are killed by mine explosions and fires. Air conditioning, now practically in its infancy in general industry, offers a possible fruitful means of safeguarding the health and to some extent the safety of the mine worker. A few mining companies are making air conditioning installations. When mine disasters with loss of life occur or when mine workers become incapacitated or die from ill health resulting from their occupation, much of the burden finally falls on the public, as cost is ultimately passed on to the user of coal or other mineral products. In addition, while the compensation received by the victims or their dependents help them temporarily, in general the families of crippled or killed miners, or the sickly or crippled miners themselves, become largely dependent on the public for support, in one manner or another. Health and safety work in mining and allied industries offers large remuneration in salvage of life and limb as well as in dollars and cents for dividends as well as for capital investment. Questions in connection with occupational disease are harassing industry and mining is deeply affected; suits involving millions of dollars have been in court in connection with dust disease, and this is only the beginning. The prevention of dust disease in mining is readily susceptible of solution and its various ramifications should be attacked vigorously. The Bureau of Mines is the best agency to handle the research.

Numerous other health and safety problems in the mining and allied industries also can and should be solved, and again the Bureau of Mines is the logical organization to do much of the work. The bureau, with its vast experience and with a definite record of accomplishment, is the spark plug to keep the work functioning effectively; but to enable the Bureau of Mines to do a good job, the funds allotted to it for health and safety work should be increased severalfold.

The Public Health Interest in Industry —Federal, State and Local

DR. WARREN F. DRAPER, Washington, D. C.: The health of about 20 million people who are engaged in productive occupations and on whom the life and health of much of the population depend is of paramount concern to those entrusted with the welfare of the nation. It is well known that certain environmental factors such as poisons, dusts, excessive temperatures and humidities, defective lighting and noise have a decided influence on the health of workers. There is evidence indicating a greater average mortality rate in the industrial population than in the group of gainfully employed persons as a whole. A high mortality is especially notable among unskilled workers. Workers in large establishments are provided with health services to some extent, but the provision of health services in small establishments is a more difficult matter.

In considering health improvement we are confronted with several problems. First, the disability and loss of time due to occupational accidents still bulk large in the layman's view of industrial hygiene. According to the last preliminary report of the National Safety Council there were 19,000 deaths in 1937 due to industrial accidents. Second, certain occupations are associated with high morbidity and mortality. Thirdly, many workers in early adult and late life are found to lack the physical capacity and mental stamina to undertake certain types of work. Lastly, we have far too much absence from work due to sickness. While accidents, occupational diseases and high occupational death rates appear to be impressive, there is no doubt that the least dramatic side, the lost time and incapacity due to illness, is important. Large industrial establishments have expanded their medical services to include such functions as preemployment and periodic physical examinations of workers, job placement, and medical and engineering control of occupational diseases. At present forty-six states have laws providing benefits in the event of accidental injury, and twenty-one of these have enacted legislation compensating workers for one or more occupational diseases. During the past year several states have had commissions studying their occupational disease problems for the purpose of guiding the legislatures in their consideration of occupational disease legislation.

The United States Public Health Service, through its Division of Industrial Hygiene, has been active for years in this field with reference to research, education and cooperative service. Today there are twenty-five state industrial hygiene units actively engaged in this work, while six other states are conducting studies for the purpose of determining their needs with reference to such a program. All but six of these units were established within the last two years. According to data supplied by the U. S. Department of Labor, the direct and indirect costs of industrial injuries in this country are approximately 5 billion dollars annually. This estimate does not include the economic losses due to nonindustrial injuries and illnesses, which we know are far in excess of specific occupational diseases and accidents. The twenty-five industrial hygiene units in the states and the federal government are spending approximately 1 million dollars. The wide difference between the economic loss and the amount spent for prevention indicates forcefully the need for greater effort for the protection and improvement of the health of the workers.

Experience has shown that in the practice of industrial hygiene the essential features of a program should include research and its application, and education. The machinery for carrying out such a nationwide program is already in existence. The Division of Industrial Hygiene has been conducting research both in the laboratory and in the field and the results have been disseminated throughout the nation to be applied by the appropriate agencies. In addition, the Division of Industrial Hygiene has been active in the development of industrial hygiene services in state and local organizations, so that conditions affecting the health of our industrial workers may be properly appraised and steps taken for their improvement.

Under an enlarged program of the Public Health Service for industrial hygiene the work naturally divides itself into three categories. First, the administrative functions concerned with coordinating all activities undertaken by federal and state agencies and by unofficial organizations. Second, the expansion of industrial hygiene units in state and local health departments. Finally the studies and investigations carried on by the laboratory and field sections of the Division of Industrial Hygiene.

The work of the division is to be carried out cooperatively with state and local health departments, industry, physicians and unofficial organizations concerned. The chief functions of a division of industrial hygiene in a state department of health are to study factors adversely influencing the health of workers, to control unhealthful conditions and to integrate all the facilities within the department of health and the state which can produce an improvement in the health of workers.

The determination of the scope and nature of the industrial hygiene problem should be the first consideration, and this will indicate the kind, magnitude and direction of the work to be undertaken in this field. It would be possible to make this determination in any state were reliable statistics available on industrial morbidity and mortality, and accurate information on occupational diseases and accidents. At present such data are lacking in nearly all the states; in some instances information on accidents exists, and less frequently on occupational diseases. The preliminary survey now in progress indicates that already sickness records are kept on nearly half of our working population. It is felt that, by intensive educational work among physicians and industrial officials, arrangements can be effected to secure reports of absenteeism due to occupational diseases and other illnesses. The Division of Industrial Hygiene has been receiving such data for many years from a group of thirty industrial sick benefit organizations, which provide sickness benefits for approximately 170,000 industrial workers. The methods for expanding this plan on a nationwide basis are therefore available. The success of a nation's industrial health program is dependent on the standard and completeness of the health services that are provided for industrial workers. While the treatment of traumatic injuries and the performance of physical examinations on applicants for work are necessary, industrial medicine can no longer be considered to be limited to these activities alone; modern practice requires the application of preventive measures as well. A plan for providing health services in industry should include:

A. Under the direction of the plant physician:

1. Regular appraisal of plant sanitation.
2. Periodic inspection for occupational disease hazards.
3. Adoption and maintenance of adequate control measures.
4. Provision of first aid and emergency services.
5. Prompt and early treatment for all illnesses resulting from occupational exposure.
6. Reference to the family physician of individuals with conditions needing attention, cooperating with the patient and his physician in every practical way to remedy the condition.
7. Uniform recording of absenteeism due to all types of disability.
8. Impartial health appraisals of all workers.
9. Provision of rehabilitation services within industry.
10. The conduct of a beneficial health education program.

B. Under the state or local bureau of industrial hygiene:

1. Consultation with plant management regarding needed corrections of environmental conditions.
2. Advice to the management and medical supervisor as to the relative toxicity of materials or processes, and advice concerning new materials prior to their introduction into the industry.
3. Assistance in developing, maintaining and analyzing absenteeism records.
4. Consultant service to medical supervisors, private physicians, compensation authorities and other state agencies regarding illness affecting workers.
5. Provision of necessary laboratory service of both a clinical and a physical nature.
6. Integration of the activities of other public health bureaus in their programs for workers; for example, the control of cancer, syphilis and tuberculosis.

To determine the best methods of controlling occupational disease and reducing illness caused by the industrial environment, laboratory and field investigations must be carried on constantly. There is a need for the determination of the toxicologic effects of inorganic and organic substances used in industry, especially new commercial compounds. For example, the development of organic solvents is increasing so rapidly that new solvents are being evolved for potential and industrial use almost every day. An evaluation of the toxic properties of such substances should be made before their commercial application in order to prevent harmful effects to the workers using them. The employment of new commercial compounds has increased the number of cases of industrial dermatitis. We must devote time to this problem, especially with regard to methods of determining the effects of materials on the skin, methods of treatment, and the development of preventive measures for control.

There is need for investigating radiation phenomena with particular reference to their effect on the spread of air borne infections, to industrial smoke pollution as a factor in health and to the determination of injury and physical changes arising from the industrial use of x-rays and radioactive materials. Studies have been requested in the field of vibration, noise and illumination. Industrial hygiene must be prepared to develop methods of measuring physical fitness under various industrial conditions such as high and low temperatures and humidities, rarefied and compressed air, and certain conditions in which repeated motion and strenuous activities are concerned. Finally, the determination of methods for controlling exposure and reducing occupational disease hazards through engineering methods is a problem which has received inadequate attention. Fundamental work on methods and equipment needed for the control of dust, fumes, vapors and gases, so that concentrations may be reduced below the threshold limits, is one of the most important functions of industrial hygiene. The Public Health Service has received requests for assistance in the way of money and of teaching personnel. Since in further promoting a satisfactory health program the needs for trained personnel will grow, it is important that institutions for clinical research and the teaching of industrial medicine be established as early as possible.

Industrial Health Activities by Labor Departments in the Government

DR. ALICE HAMILTON, Washington, D. C.: The subject given to me is the part played by the federal and state departments of labor in the protection of workers against accident and disease. The federal government for many years did not concern itself with industrial health, and the Division of Labor Standards, the branch of the Department of Labor now concerned with it, is of very recent origin. While it is simply an advisory body, the function of the Division of Labor Standards is very important. Its duty is to formulate codes of safe procedure which the states may adopt and to frame model laws which the states may, if they choose, enact. This means a great deal of fact finding and of consultation with experts in many fields.

A labor department thinks first of the practical aspect of the problems of industrial health, of the way in which the actual worker in the actual factory or mine is to be protected against the dangers which experts have discovered. In this country the greatest obstacle to good practice in this field is lack of trained factory inspectors. The English factory inspector is a college graduate, considers his position one of dignity and importance, and has permanent tenure. One of the great aims of the Division of Labor Standards is the training of factory inspectors, and in its brief life the division has held four regional schools for factory inspectors. The first one was in Baltimore under the auspices of the Johns Hopkins University School of Medicine. Inspectors from Virginia, West Virginia, North Carolina and Tennessee attended. We had lectures in the morning and visits to factories in the afternoon. We tried to show them where the danger was. The other schools have been held in Pennsylvania and in two groups of Middle Western states. In addition, the Division of Labor Standards has prepared four page leaflets which tell the effects of poisons and dusts, the mode of prevention and the proper treatment.

The working out of codes in cooperation with the American Standards Association and with the Public Health Service is another duty of the Division of Labor Standards. The great problem facing the division at the outset was silicosis. The Division of Labor Standards had as its duty the prevention of silicosis by proper engineering devices, the discovery of such devices and their application in industry. This was the starting point for the four committees on silicosis which made up the National Silicosis Conference, committees of experts in medicine, in engineering, especially ventilation engineering, in the economic and insurance phases of the problem, and in regulation and law enforcement. An important part of the work of the division is rendering special service to the state labor departments, many of them fairly new in this work. When I go to Washington, I am asked to take part in a conversation with some labor official faced with a problem with which he does not know how to deal. The division can give him advice and lend him the services of an industrial hygienest with practical industrial experience, with ability to make air analyses and to test ventilating apparatus.

Much information comes to the division through its connection with labor concerning dangers in certain occupations. Some of this is erroneous, the men making wrong conclusions from what they see. Much of this information from workmen has a real basis, and complaints and compensation claims on the part of workers have brought to light many more industrial dangers than have ever been revealed by physicians' reports. In every state and, so far as I can find, in every industrial country the effort to get doctors to report cases of occupational disease has been unsuccessful. It was the complaints of employees that revealed the toxic action of tetra-ethyl lead, of luminous paint, of manganese and of many of the newer solvents. It is for the Division of Labor Standards to listen to the reports of trade union officials and to sift out the facts or to initiate an inquiry which will bring out the facts and show whether or not the workers' fears are justified. I remember in the old days in the rubber industry, when aniline and aniline derivatives were the chosen accelerators, that I was skeptical of complaints from the heat vulcanizing end. I thought the danger was in the compounding room and in the mixing mills. Then the chemist showed me how chemical reactions taking place under the influence of the heat would result in the production sometimes of aniline, sometimes of aniline derivatives and even of mustard gas.

Thirty years ago the first start was made in this field by the federal government, but the activity of the state governments is of much more recent development. Even now, only a minority of the forty-eight states have made a beginning. Very few have worked out a capably functioning division of industrial hygiene, and yet it is only in the states that this work can be practically done. The federal government may help in the establishment of such units but it is the state that must run the unit. The best state organization in the country is that of New York State. In 1936 there were more than 1,900,000 factory employees in that state. There were 457,516 accidents reported and 1,500 cases of occupational disease. The department has a personnel of thirty-four: six doctors, eight engineers, seven chemists, five safety men and eight clerical employees. It has a library and its own laboratory. It is expected to inspect and pass on all ventilation equipment, to make chemical analyses of all unknown materials, to carry on routine inspections of factories and special inspections on the basis of complaints from workers, and to do research work on problems of dusts and poisons. The relation to the actual factory inspection service is very close, yet the physicians connected with the department do carry on research in the dusty and poisonous trades. We must all remember their bulletin on lead poisoning, based on the careful examination of 1,480 lead workers, their bulletin on carbon monoxide, and recent articles on ethylene glycol monomethyl ether, methanol acetate, trichlorethylene, and their reports on silicious dusts. The great advantage the department in New York has is that the results of such research are at once the property of the law enforcing and code formulating units of the department, and that the research may be initiated at the request of the nonscientific division when suspicion has been aroused in factory inspection with regard to certain processes in an industry. This is an important point. An indus-

trial hygiene unit should have the closest possible connection with the department whose responsibility is the protection of the health of the workers.

The Labor Department of New York receives a complaint from a trade union that conditions in a certain plant are such as to cause sickness among the workers. The factory inspector reports that a certain new solvent is used there, and the people think it makes them sick. He does not know what the solvent is or whether the sickness is caused by it. The labor department in such a case should question the industrial hygiene unit, and the latter should be ready and able to respond by sending engineers and chemists to determine the hazard and physicians to make a study of the illness. The industrial hygiene unit may be more interested in research than in its application to industry, but the results of its research will be of little value unless they are passed on promptly to the enforcing branch. Imagine a factory in which the personnel department and the medical department work independently of each other, where the doctor might observe a disproportionate number of cases of disability coming from one department but would not inform the personnel management and request an inquiry to determine the cause. Such a system would be considered inefficient. The industrial hygiene unit of the state should be the consultative aid of the Department of Labor.

One function of the New York Department of Labor is to help in settling workmen's compensation claims. This is objectionable to most industrial hygienists, and they seek to avoid any traffic with these controversial matters. Indeed, I believe that in Connecticut the law creating the industrial hygiene bureau in the department of health specifically states that the bureau may not be called on to give help in compensation suits. I cannot see that that is a reasonable stand to take. Compensation suits are far too much in legal hands already. Such a method throws them still more into the hands of the lawyers and the doctors selected by them and makes an impartial decision more difficult. The claimant and the insurance company must be allowed to have their medical experts, but then there should be an appeal to an impartial expert, and where should one look for him except in a governmental body? I sympathize with men who are reluctant to subject themselves to the treatment that lawyers, alone among civilized men, think it proper to deal out to their fellow men if they happen to be on the other side, but I do not see how the branch of the state government that is entrusted with the problems of industrial accidents and diseases can wash its hands of this kind of expert service.

The Activities of Independent Agencies in the Field of Industrial Health

DR. W. J. MCCONNELL, New York: Independent agencies engaged in industrial health work may be classified into general groups of private foundations and national associations, universities, trade associations, insurance carriers, industrial and mercantile establishments, and labor groups.

The Air Hygiene Foundation of America, Inc., is a nonprofit organization supported by the industries and dedicated to the advancement of industrial health through the study of occupational diseases. Research projects and studies supported by the foundation are in progress at a number of institutions. The foundation has surveyed medical, engineering and legal phases of current occupational disease problems and has developed an exhaustive bibliography and data file on occupational diseases, enabling the organization to serve as a clearing house of information on the subject. Abstracts of current occupational disease literature are issued monthly. Three professional committees, medical, preventive engineering, and legal, each composed of specialists in their particular fields, are maintained by the foundation.

The American Association of Industrial Physicians and Surgeons was organized in Detroit twenty-four years ago. Scientific exhibits of interest to the industrial physician are features of the annual meeting. A committee has under consideration a field survey of plant dispensary equipment to determine to what extent plant medical equipment can be standardized and what are the approximate costs of adequately equipping plant dispensaries of various sizes.

The American College of Surgeons does excellent work through its Committee on Industrial Medicine and Traumatic Surgery.

The American Medical Association has always published in THE JOURNAL information in the field of industrial health, but emphasis was given the subject a decade ago through the organization of the Section on Preventive and Industrial Medicine and Public Health. The Association authorized in June 1937 the organization of a Council on Industrial Health as a standing committee of the Board of Trustees. The Council was organized in December 1937 and has developed a working organization through the appointment of a secretary and the creation of official committees.

The American Public Health Association for twenty-five years has engaged in the study of a wide variety of public health subjects through the Industrial Hygiene Section, which is one of ten sections of the association.

The American Society of Heating and Ventilating Engineers, through its research laboratory, for a number of years has been conducting studies on the effects of high temperatures and various humidities on workmen. The laboratory recently has studied the reactions of different groups of office workers to air conditioning. A committee of the society is engaged in a study of high humidities such as are found in the textile industries. A joint committee of the society and of the American Society of Refrigerating Engineers has drawn up a code of recommended minimum requirements for comfort air conditioning. Another committee of the society and the U. S. Weather Bureau are conducting a study at the present time for the purpose of establishing weather design factors which may be useful in the design and operation of air conditioning systems.

The American Standards Association is a federation of national associations and governmental departments. It serves as a clearing house through which industrial, technical and governmental groups develop and coordinate their standardization programs in the interests of economy, looking forward toward the development of a single, consistent set of national standards. It is the recognized national standardizing agency. Any organization with standards which it feels would be more effective if approved as American standards may present its standards to the association for approval. This association initiates projects in the field of industrial health only when a specific request has been received and after the request has been investigated and approved by the standards council of the association. About 400 standards and safety codes have thus far been approved. The association is developing a safety code for work in compressed air. A code on electroplating is in draft form. The association's reports on "Fundamentals Relating to the Design and Operation of Exhaust Systems" was the first document of its kind to be prepared. Other subcommittees have been organized to develop standards for rock drilling, grinding, buffing and polishing and similar subjects, with particular relation to the use of exhaust systems. An important activity in the field of industrial health is the work of the Sectional Committee on Allowable Concentrations of Toxic Dusts and Gases.

The Illuminating Engineering Society was organized in 1906 for the advancement of the theory and practice of illuminating engineering. Its chief contribution to the field of industrial health lies in its code of lighting for factories, mills and other work places. This code has been officially approved as an "American standard" by the American Standards Association. The society is engaged at the present time in preparing good lighting practices for specific industries.

The National Safety Council is interested primarily in industrial and public safety. The council's booklets "The Healthy Worker" and "Safeguarding Women in Industry" have had wide distribution. The *National Safety News*, a monthly paper, carries an industrial health section.

The National Tuberculosis Association, through a number of local organizations, have included at one time or another, among other activities, an industrial health program.

The Saranac Laboratory for the Study of Tuberculosis undertakes research studies sponsored by the Trudeau Foundation. They are coordinated with clinical, roentgenologic and engineering field studies in industries in which dust and tuber-

culosis constitute an occupational hazard. Animal experimentation is used to test hypotheses formulated from field data to explain peculiar manifestations of disease and their causation. The problems of study at present fall into two groups, one which concerns the effects of dust alone and a second in which alterations in susceptibility to tuberculosis are of primary interest. While field investigations of certain industries are conducted for the confidential information of those concerned, the many research studies issued by the laboratory and addresses by the members of the laboratory staff are given wide circulation.

The Industrial Health Conservancy Laboratories was established on a fee basis to serve industry in all health problems relating to workers and working conditions. Organized in 1920, it is the oldest privately maintained organization of its kind in the United States. Its field of activity has covered such subjects as industrial intoxications, occupational diseases, industrial hygiene, industrial epidemics, medical organization and authoritative testimony. Three types of services are offered to industry: membership services, retainer services, and special and miscellaneous services. The organization issues a booklet describing these services and kindred matters.

Among the independent agencies which are not only conducting research and field investigations in the industrial hygiene field but are offering courses of instruction in industrial hygiene to students and graduates are a number of the universities in every section of the country.

The American Foundrymen's Association's efforts in the field of industrial health are directed toward the development of good practices for the foundry industry and the collection of information helpful in formulating codes for the industry. The Industrial Hygiene Codes Committee of this organization has so far published three good practices reports and is engaged in preparing others.

The National Association of Manufacturers' Committee on Healthful Working Conditions, recently organized, is interested for the present in the coordination of the best practices in industrial medicine in an effort to adapt them to the varying types of manufacturing plants, and the "selling" of good industrial practices to the industrialists of the country.

The Portland Cement Association has conducted an anticold campaign among the employees of member plants and at present is providing funds for a dust-health study of the cement industry.

Another group of independent agencies actively interested in the promotion of industrial health work is the insurance group. A number of the compensation carriers maintain a laboratory of industrial hygiene for the study of existing industrial health hazards and of measures for controlling them in the plants of the industries which they insure under their workmen's compensation policies. A partial list, at least, of the compensation companies maintaining industrial hygiene laboratories are the Aetna Life of Hartford, Conn., the Employers Liability of Boston, the Employers Mutual Liability of Wausau, Wis. (laboratory at Milwaukee), Fidelity and Casualty of New York, Liberty Mutual of Boston, Maryland Casualty of Baltimore, Michigan Mutual Liability of Detroit, Travelers of Hartford, Conn., and the Zurich General Accident Liability of Chicago.

The largest group of independent agencies whose activities in the field of industrial health are directed particularly toward safeguarding the health of workmen is the employer group. The duPont organization has erected an institute known as the Haskell Laboratory of Industrial Toxicology, the staff of which determines the toxicity of the many chemical products manufactured by the organization and recommends safe methods of employing them in industrial processes. The Union Carbon and Carbide Chemical Corporation recently has begun a study of the toxicity of some of its products. Many other organizations have established industrial hygiene laboratories for the study and prevention of health hazards encountered in their respective plants. These services are all supplementary to well rounded health programs carried out in each subsidiary of the corporation. Unique features of the medical program of the American Telephone and Telegraph Company are the general health course and the nutrition course for women, with certain follow-up activities, and the course in safety and first aid for men. Emphasis is placed on the development of proper health habits conducive to the maintenance of good health and to practical everyday methods of living.

Labor organizations, as a group of independent agencies, appear rather backward in any sustained efforts in the field of industrial health. Attempts have been made by labor organizations to promote health programs, but for some reason best known to themselves these programs were discontinued. A notable exception is the health service rendered by the Union Health Centre to its members. This organization for twenty-five years has acted as the Health Department of the International Ladies Garment Workers Union. With the exception of a single grant of $20,000 from the Rosenwald Fund, the Union Health Centre has been supported from fees from its members. In 1934 it became an integral part of the International Union.

The group of independent consultants in industrial health is composed of eminent industrial physicians and engineers whose services are available to industrial organizations, large or small, that may require consultation service.

DISCUSSION ON GOVERNMENTAL INTEREST IN INDUSTRIAL HEALTH

DR. CARTER: I want to ask a question about the publishing of these papers. Are you going to publish them in THE JOURNAL or in a bulletin?

DR. H. H. KESSLER, Newark, N. J.: They will be published in THE JOURNAL.

DR. CARTER: I think we should have a bulletin.

DR. KESSLER: In New Jersey there are several medical agencies that are interested in the field of industrial health. We have a Committee on Industrial Health in the state medical society, and a new branch of the American Association of Industrial Physicians and Surgeons has been developed. The governor has called a conference on medical care, and it is through that conference that a subcommittee on industrial health has been formed. These three groups, and still another group, the New Jersey Sanatorium Officers Association, are interested in industrial health, and they will have an opportunity for expressing their points of view on certain state programs and governmental programs that will be developed. As Dr. Draper described, and also Dr. Hamilton, the federal government is interested in establishing programs of industrial hygiene throughout the country and so far twenty-five states have adopted this program under the auspices of the state department of health. In New Jersey this program has not yet gotten under way because of opposition of the state department of labor to the establishment of such a program under the auspices of the state department of health.

MR. LOUIS RESNICK, New York: Dr. McConnell overlooked one national health agency in New York, and that is the National Society for the Prevention of Blindness. The society has a very small industrial relations department and has published a book entitled "Eye Hazards in Industrial Occupation," a handbook for state engineers and industrial executives. It is now revising the book and will bring out a new edition in the spring. It has also made a study of eyes saved in industry, in cooperation with the National Safety Council. It has published a number of smaller pamphlets, including "The Self-Appraisal of Eye Protective Measures" and a so-called program for 100 per cent eye protection. It held joint meetings with the National Safety Council and the American Association of Industrial Physicians and Surgeons in Detroit a few years ago. Those who are interested may write to the National Society for the Prevention of Blindness and get a complete list of its industrial publications. Most of them are available for free distribution.

DR. A. S. LEVEN, Chicago: Dr. McConnell pointed out the various independent agencies that have been doing splendid work in trying to increase the health of the worker and the health conditions in industry. He pointed out that the greatest group responsible for this phase of work was the employers' group; also that the least groups are the insurance carrier and working groups. That is a little bit conflicting. From my experience in the field of industry, some of the large industrial firms—employers—have done and are doing fine work toward their employees, but the majority of those in the employer group had not been interested greatly with reference to the health of employees or to health conditions in industry until the employees,

governmental agencies and labor groups forced them to take cognizance of the fact. Dr. Draper pointed out that there were over 19,000 cases of deafness due to injuries that arose in the course of employment. He pointed out that there were over two million workers exposed to the hazards of dust; there were over one million workers injured and maimed during employment. What good does it do to find a worker suffering from tuberculosis or pneumoconiosis if one is not able to do something for him? What good is it to find a worker suffering from a dermatosis or other conditions when there are no provisions made to take care of him or his family adequately during the course of treatment? The doctor must be considered in this problem. He must be paid for his work. If adequate medical provisions are made, with all these problems which were presented for the adequate health protection of industry, we should include also the health and the economic protection of the doctor.

DR. W. J. MCCONNELL, New York: No doubt there are other organizations that I omitted. I regret that I could not give in more detail the work some of these organizations are doing. A number of the directors of those organizations are present and I was hoping that they would perhaps elaborate. I did not intend to give the impression that the insurance carriers were grouped with labor. Perhaps modesty prevented me from emphasizing the excellent work which I think the various insurance companies have been doing in industrial health.

(To be continued)

RADIO BROADCASTS

The fourth series of programs broadcast in dramatic form portraying fictitious but typical incidents of significance in relation to health by the American Medical Association and the National Broadcasting Company, entitled "Your Health," began Wednesday October 19 and will run consecutively for thirty-six weeks. The program is broadcast each Wednesday over the blue network of the National Broadcasting Company at 2 p. m. eastern standard time (1 p. m. central standard time, 12 noon mountain time, 11 a. m. Pacific time).[1]

These programs are broadcast on what is known in radio as a sustaining basis; that is, the time is furnished gratis by the radio network and local stations and no revenue is derived from the programs. Therefore, local stations may or may not take the program, at their discretion, except those stations which are owned and operated by the National Broadcasting Company.

The next three programs to be broadcast, together with their dates and their topics, are as follows:

February	22.	Cancer Can Be Cured.
March	1.	Diabetes.
March	8.	Water, Waste and Sanitation.

1. Owing to program conflicts, there will be no Chicago broadcast of the network program. Instead, a recording of the program will be broadcast over station WENR at 8 p. m. each Wednesday. This recording will be an identical rebroadcast of the network program broadcast earlier the same day.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Bills Introduced.—H. J. Res. 153, introduced by Representative Sirovich, New York, proposes to authorize the Bureau of Marine Inspection and Navigation of the Department of Commerce and the Division of Marine Hospitals and Relief of the United States Public Health Service to investigate, among other things, the percentage of lascar seamen requiring medical attention in American ports and the number put ashore for hospital treatment. H. J. Res. 162, introduced by Representative Sirovich, New York, proposes to establish an annual award in each of the fields of literature, music, art, drama, journalism, medicine, chemistry, physics and mathematics, to be known as Distinguished Service Medal in Arts and Sciences, to foster and encourage the development of science, art and literature in the United States. H. R. 2975, introduced by Representative Voorhis, California, proposes to amend the Social Security Act by authorizing an initial appropriation of $10,000,000 and thereafter for each fiscal year a sum sufficient to carry out the purposes of the bill, to enable each state to furnish financial assistance, or other assistance, including but not limited to medical, dental and mental aid, to needy transients. H. R. 2987, introduced by Representative Reed, Illinois, proposes to compensate any employee of the United States government who shall furnish blood for transfusion to a member or former member of the military establishment who is a patient in a government hospital. H. R. 3141, introduced by Delegate Dimond, Alaska, proposes to extend the benefits of the United States Public Health Service to persons aboard or operating any vessel in fishing operations. H. R. 3530, introduced by Representative Maas, Minnesota, proposes to authorize an appropriation of $650,000 to erect a veterans' domiciliary unit to provide 700 beds at Fort Snelling, Minnesota, and to provide the necessary auxiliary structures, mechanical equipment and outpatient dispensary facilities. H. R. 3578, introduced by Representative Cannon, Florida, proposes to authorize an appropriation of $1,423,000 to construct a marine hospital in or near the city of Miami. H. R. 3644, introduced by Representative Bradley, Michigan, proposes to authorize an appropriation of $700,000 to construct a veterans' hospital in or near Gladstone, Mich., with a capacity of 150 beds, "for the accommodation of veterans entitled to such facilities under existing law and future law." H. R. 3700, introduced by Representative Peterson, Florida, proposes to authorize an appropriation of such sums as may be necessary to construct a marine hospital in Florida on a site to be selected by the Federal Board of Hospitalization. H. R. 3941, introduced by Representative Havenner, California, proposes to authorize an appropriation of $600,000 to construct a 134 bed patient capacity addition to the existing veterans' facility at Fort Miley, Calif., for the treatment of general medical and surgical disabilities. H. R. 3951, introduced by Representative Smith, Ohio, proposes to amend the recently enacted federal food, drug and cosmetic act so that a manufacturer or distributor of any nostrum favored by the amendment may be enabled, through mail order diagnoses by physicians employed to make them, to sell his wares throughout the country without complying with the labeling requirements imposed on his less favored competitors. A nostrum to be thus favored, however, is to be such as has been "not dangerous to health and has been effective in relieving the condition for which it is prescribed in at least 1,000 cases a year during the last twenty years preceding the approval of this act." H. R. 3999, introduced by Representative Whelchel, Georgia, proposes to amend the Social Security Act so as to provide federal financial aid to states to enable them to assist needy individuals who are permanently crippled to a degree that precludes them from being able to engage in a gainful occupation.

DISTRICT OF COLUMBIA

Bills Introduced.—H. R. 3650, introduced by Representative Guyer, Kansas, proposes to prohibit, within the District of Columbia, the manufacture, importation, exportation, transportation, sale, gift, purchase or possession of any spiritous, vinous, malt, fermented, and all alcoholic liquors whatsoever which may be used as beverages, except natural wine for religious services and ethyl alcohol used (1) for compounding or manufacturing medicines for internal use, and (2) by physicians, surgeons and dentists as a disinfectant. H. R. 3808, introduced by Representative Reece, Tennesssee, proposes to provide for the use of scientific tests to determine the degree of intoxication of operators of motor vehicles in the District of Columbia whose vehicle causes personal injury or substantial damage to any other vehicle or property.

STATE MEDICAL LEGISLATION

Alabama

Bills Introduced.—S. 13 proposes to require the governing body of each county to appropriate annually a sum equivalent to not less than 20 cents per capita of the population of such county, to be used for the maintenance and operation of a full time county health department. H. 155 proposes to appropriate $50,000 annually for the next two years to provide state aid to the several counties for constructing or expanding county and/or district tuberculosis hospitals. H. 164 proposes to eliminate the provisions in the present medical practice act requiring that not less than two examinations of applicants for licensure shall be held annually and to provide instead for the holding of examinations annually.

Arizona

Bills Introduced.—H. 115, to amend the provisions of the medical practice act, proposes, among other things, that "Holders of certificates and permits to practice medicine and surgery and holders of certificates and permits to practice osteopathy shall be accorded equal rights and privileges by public institutions, officers, and commissions." H. 148 proposes to prohibit the retail sale or distribution of any device, appliance or medical agent used in the prevention of venereal disease except by licensed physicians and by licentiates of the State Board of Pharmacy.

Arkansas

Bill Passed.—H. 92 passed the house, February 3, proposing that nothing in the dental practice act "shall prohibit or prevent any licensed physician from extracting teeth in an emergency when he shall deem it advisable and when a licensed dentist is not reasonably available."

Bills Introduced.—S. 143 and H. 252 propose, as a condition precedent to the issuance of a license to marry, that both parties to a proposed marriage present certificates from licensed physicians that they have submitted to physical examination, including a Wassermann and/or Kahn blood test, and a dark field test where indicated, and that, in the opinion of the physicians, the parties either are not infected with syphilis or are not in a stage of that disease which may become communicable. House 252 was reported favorably to the House January 31. S. 41 and H. 222 propose to provide for the payment of compensation to workmen injured in the course of their employment and to require an employer to supply an injured employee with necessary medical, hospital and nursing care. Under both bills an injured workman must accept the physician tendered by the employer, and only if the employer fails or neglects to provide a physician may an injured workman select a physician of his own choice. Neither bill proposes to provide compensation for disability resulting from occupational diseases. H. 220 proposes to repeal the existing laws relating to sale and disposition of food and drugs and to enact a uniform food, drug and cosmetic act. S. 194 proposes that, whenever in a civil or criminal proceeding issues arise on which the court deems expert evidence desirable, it may appoint one or more experts, not exceeding three on each issue, to testify at the trial. The fact that such experts have been appointed by the court is to be made known to the jury. S. 223 proposes to enact a retail sales tax law and to impose a tax of 2 per cent on the gross proceeds derived from sales of tangible personal property. The bill specifically provides that the tax shall apply to "All sales made by physicians, surgeons, optometrists, oculists, opticians, veterinarians, dentists . . . or any other person engaged in rendering personal and professional service in which any tangible personal property is sold or consumed." H. 287 proposes to enact a new cosmetic therapy or beauty culture practice act which purports to permit licentiates, among other things, to remove superfluous hair from the body of any person by the use of the hands, mechanical or electrical apparatus, or by the use of cosmetic preparations or antiseptics. This bill was reported favorably to the house on February 7. H. 335 proposes to prohibit the operation of a hospital unless licensed by the State Welfare Board. The board is to be authorized to revoke the license of a hospital having "sanitary conditions and professional conduct" contrary in its opinion to the best interests, safety or welfare of the people. The bill specifically provides that "The standard of ethics as adopted by the American Hospital Association is hereby adopted as a standard by which any hospital in this state shall operate."

Georgia

Bills Introduced.—H. 190 proposes to strike out those provisions of the medical practice act which require that five members of the Board of Medical Examiners be regular physicians, three to be eclectic physicians and two to be homeopathic physicians. This bill was reported favorably to the house, February 10. H. 238, to amend the law permitting the organization of corporations to operate nonprofit hospital service plans, proposes that "at least a majority of the directors of such a corporation must be at all times directors, superintendents or trustees of hospitals . . . which have contracted or may contract with such corporation to render its subscribers hospital service, or a Board of Trustees which shall be approved by the Insurance Commissioner."

Idaho

Bill Passed.—S. 71, to amend the medical practice act, passed the senate February 3 and the house February 9, proposing, in effect, to permit "students who have had training in recognized medical colleges in good standing and who are performing the duties of an intern in . . . any duly organized hospital . . . operating under the supervision of a medical staff" freely to perform their duties without being licensed to practice medicine.

Indiana

Bills Introduced.—S. 173 and H. 291 propose to enact a self-styled "Uniform Indiana Food, Drug, and Cosmetic Act," to regulate the sale and distribution of foods, drugs, cosmetics and therapeutic devices. H. 34 proposes to impose a tax of 1 per cent on the gross income from professional services.

Iowa

Bill Introduced.—H. 120, to amend the chiropractic practice act, proposes that a license to practice chiropractic "shall authorize the holder thereof to practice chiropractic and to use light, heat, air, water, diet and exercise in the treatment of disease; but shall not authorize the licensee to practice operative surgery, obstetrics, x-ray therapy, or administer or prescribe any drug or medicine included in materia medica."

Kansas

Bills Introduced.—H. 147 and S. 171 propose extensive amendments to the osteopathic practice act. Most important, both bills propose that an osteopath is to have the right "to practice osteopathy in all its branches, which includes operative surgery with instruments, physiotherapy and the use of drugs, as taught and practiced in the legally incorporated colleges of osteopathy of good repute, and the right to register under the laws of the United States of America governing narcotics."

Maine

Bills Introduced.—H. 708 proposes to require osteopaths to renew their licenses annually, to pay an annual fee of $2, and to condition annual renewal on the presentation by each licentiate of satisfactory evidence that he has attended in the preceding year at least two days of the annual "educational" program conducted by the State Osteopathic Association, or its equivalent. H. 931 proposes to make stated persons, residents of Portland, a body corporate to be known as the Associated Hospital Service of Maine, whose purpose is "To establish, maintain and operate a non-profit hospital service plan, whereby hospital care may be provided by hospitals or groups of hospitals with which this corporation has a contract for such purpose, to such of the public as become subscribers to said plan under a contract which entitles each subscriber to certain hospital care."

Massachusetts

Bills Introduced.—S. 396 proposes that no lumbar or spinal puncture shall be made on any patient or inmate of any state institution unless previously thereto a signed written assent is obtained from the patient. H. 1401 proposes that no person be required to submit to vaccination or inoculation as a condition precedent to admission to any public school or other institution nor to the exercise of any right, performance of any duty, or enjoyment of any privilege. Any person who vaccinates or inoculates a child, or an adult under guardianship, without the written consent of parent or guardian is to be subject to a fine of $100 or imprisonment for a year or both. H. 1407 proposes, in effect, to limit licensure to practice medicine to citizens of the United States or to persons indicating their intention to become such by filing first papers. The bill, however, is not to prevent the board of registration in medicine from permitting foreign specialists to practice in the state for any period the board permits. H. 1535 proposes to permit the Department of Public Welfare to establish and maintain health clinics in cities of more than 50,000 population. H. 1543 proposes, before a person under complaint or indictment for crime can be committed to a hospital for the insane, that he or she shall have the right to be examined, at the expense of the state, by two physicians of his own choice. H. 1778 proposes to require factories to maintain, in addition to the first aid appliances now required, "the services of a registered nurse for the treatment of persons injured or taken ill upon the premises." H. 1827 proposes to require every physician attending a pregnant woman to take or cause to be taken a sample of her blood at the time of first examination and to submit such sample to an approved laboratory for a standard serologic blood test for syphilis. H. 1828 proposes, as a condition precedent to the issuance of a license to marry, that both parties to a proposed marriage present physicians' certificates showing that "a blood examination of both parties has been made within ten days, separately and individually, in which a serological complement fixation or flocculation test was made at a regularly approved laboratory . . . and that both tests have been negative for syphilis." A marriage license may issue if any party fails to present the certificate just referred to if he or she presents a physician's certificate that the party has been Wassermann fast during a period of three years and has received not less than forty arsphenamine injections and not less than fifty heavy metal injections. The bill also provides that "A test for gonorrhea shall be requested of both applicants for marriage license, but this examination shall be voluntary only on the part of the female and may be waived by her if she refuses such an examination." H. 1489 proposes that whenever a medical question is in dispute in any case the court may appoint a duly qualified impartial physician to appear and testify and may allow him for so testifying a reasonable fee and necessary traveling expenses. H. 1432 proposes to impose an annual occupational tax of $5 on all persons practicing any profession in the state. S. 326 proposes to make it unlawful for any person attached in any capacity to any hospital or sanatorium to aid an attorney to solicit a retainer or other authority to perform legal services for any person confined in the hospital or sanatorium. H. 1898 proposes a system of compulsory and voluntary sickness insurance, the benefits of which are to consist of cash and all forms of medical, dental and hospital services. Persons covered by the Massachusetts unemployment compensation law are included in the compulsory insurance of the bill. All other persons may elect to participate in the voluntary insurance. H. 1643, to amend the workmen's compensation act, proposes to permit an employer to obtain policies of workmen's compensation insurance excluding from their coverage any or all medical and hospital services and medicines. An employer procuring such a policy is to be solely liable for the obligation excluded.

Missouri

Bills Introduced.—H. 111, to amend the osteopathic practice act, proposes to provide that "The system, method or science of treating diseases of the human body, commonly known as osteopathy, and as heretofore or hereafter taught and practiced by colleges of osteopathy recognized and approved by the Missouri State Board of Osteopathic Registration and Examination, is hereby declared not to be the practice of medicine and surgery within the meaning of" the medical practice act. S. 29 proposes to require all applicants for licenses to practice any form of the healing art, as a condition precedent to the right to examination and licensure by their respective professional boards, to pass examinations in anatomy, physiology, chemistry, bacteriology and pathology to be given by a board of examiners in the basic sciences which the act proposes to create.

New Hampshire

Bill Introduced.—H. 291 proposes to repeal existing laws regulating the possession and distribution of narcotic drugs and to enact what appears to be the uniform narcotic drug act. Narcotic drugs, as defined by the bill, are to include coca leaves, cannabis, opium and every substance neither chemically nor physically distinguishable from them.

New York

Bills Introduced.—A. 500 proposes to enact an entire new insurance code. Among other things, the bill contains provisions authorizing the organization of corporations to operate on a nonprofit basis plans either (1) for medical expense indemnity or (2) for hospital service, but not both. Medical expense indemnity, the bill proposes, is to consist of reimbursement for medical care provided through duly licensed physicians and for nursing service and the furnishing of necessary appliances, drugs, medicines and supplies. A. 523 proposes to authorize the supplying of all forms of medical, surgical, dental, hospital and nursing care to the public at large without cost by persons in the employ of the department of health. All licensed practitioners of medicine, dentistry, pharmacy and nursing who submit to the provisions of the bill and practice as directed by the department are to receive an annual compensation from the state of up to $6,000. The bill proposes that the administration of these services be vested in four new divisions to be created in the State Department of Health and that the department exercise exclusive charge and control over all of the public hospitals of the state and exercise complete supervisory powers over all private hospitals. The department is to have power to build or acquire medical supply depots, medical laboratories, hospitals, dispensaries and sanatoriums. A. 762 proposes to require any person arrested on suspicion of driving a motor vehicle while intoxicated to submit to examination by a licensed physician designated by the appropriate county or city medical society. The examination must be made within two hours after arrest and is to include coordination and blood or urine tests. A. 771 proposes to create a temporary state commission to investigate and analyze the nature and extent of mental disorders and defects, to determine the relationship between mental ailments and crime or criminal tendencies and the legal responsibility and punishment of persons who are mentally sick, for crimes committed by them. A. 784 proposes to require a physician treating a case of cancer or other malignant tumor to report the facts to the appropriate health officer. A. 794 proposes to enact a separate chiropractic practice act and to create a board of chiropractic examiners to examine and license persons to practice chiropractic. "The practice of chiropractic" the bill defines as "the science of locating and the removing of nerve interference in the human body according to chiropractic principles, where such interference is indicated or misalignment or subluxations of the vertebral column appear. It excludes operative surgery, prescription or use of drugs or medicine, or the practice of obstetrics." A. 801 proposes to limit the issuance of licenses to practice medicine, dentistry, nursing, professional engineering and architecture to citizens of the United States. A. 340, to amend the law granting hospital liens for services rendered in caring for persons injured through the negligence of another, proposes that the fee for filing a claim of lien in the counties comprising the city of New York shall be 50 cents and that the fee for filing a discharge of lien in those counties shall be $1. S. 344 proposes to authorize boards of education to provide children who attend schools other than public with all or any of the health and welfare services and facilities, including but not limited to health, surgical, medical,

dental and therapeutic care and treatment, and corrective aids and appliances, authorized by law to be provided children in the public schools. The bill also proposes that the Board of Education in a city may provide for physically handicapped children transportation, home teaching, special classes or special schools, scholarships in nonresidence schools and, on recommendation of the state department of health, surgical, medical, dental or therapeutic treatment, hospital care, crutches, braces and other supplies. A. 569, to amend the insurance law and the membership corporation law in relation to nonprofit health service plans, proposes to authorize the organization of corporations to operate a nonprofit health service plan, including complete medical, surgical and hospital care, to such of the public as become subscribers to the plan. A. 737, to amend the medical practice act, proposes to make it an additional ground for suspension or revocation of a license for the holder thereof (1) to have been guilty in any way of unprofessional conduct, or (2) to have advertised by any means for patronage. A. 614 proposes to create a temporary state commission to study the dental needs and requirements of the inhabitants of the state and to collect data and statistics looking toward the establishment of a long range state supervised dental program. A. 755 proposes to amend the hospital lien act, which specifically gives any person or corporation legally liable for the lien the right to examine hospital records in this matter, but also giving this right of examination to the injured person or his legal representative, in case of death. A. 756 proposes to amend those provisions of the medical practice act making it a ground for the revocation or suspension of a license to practice for the holder thereof to advertise for patronage by means of handbills, posters, circulars, letters, stereoptical slides, motion pictures, newspapers, radio or magazine but proposes also a similar penalty for advertising for patronage by newspapers.

North Dakota

Bills Introduced.—H. 154 proposes to prohibit the operation of maternity homes and hospitals or institutions with maternity beds unless licensed by the State Department of Health. H. 170 proposes to deny tax exemption to any hospital "wherein any physician and surgeon who holds a valid and unrevoked license to practice his or her profession in the state is denied the right and opportunity to fully use and enjoy the facilities thereof." H. 226 proposes to require all applicants for licenses to practice any form of the healing art, as a condition precedent to their right to examination and licensure by their respective professional boards, to pass examinations in anatomy, chemistry, physiology, pathology and bacteriology to be given by a board of examiners in the basic sciences. The board is to consist of one physician and surgeon, one chiropractor, one osteopath and two other members "who shall be of good education in the basic sciences and not engaged in the practice of medicine, osteopathy, chiropractic, or otherwise professionally practicing for a fee for the public in the diagnosis of disease or the treatment of human ailments."

Oklahoma

Bills Introduced.—S. 17 proposes to authorize the state commissioner of health to appoint one regularly licensed physician for each county in the state to give medical treatment free of charge to such persons as make affidavit that they are unable to pay for such medical treatment. Such physicians are to be paid from $150 to $200 a month, may not engage in the private practice of medicine, are to be furnished an automobile by the state and are to receive drugs, medicines, bandages and medical equipment on requisition to the state commissioner. Such physicians are not to perform major surgical operations, which must be performed at the state hospitals. H. 131 proposes as a condition precedent to the issuance of a license to marry that both parties to a proposed marriage present a physician's certificate that they are free from syphilis and gonorrhea.

Oregon

Bills Introduced.—H. 89, to amend the medical practice act, proposes, among other things, (1) to permit the Oregon State Medical Society to nominate, for appointment by the governor, persons it desires to serve on the Board of Medical Examiners; (2) to require the Board of Medical Examiners to meet for the examining of applicants on the second Tuesday, Wednesday and Thursday in January and the third Tuesday, Wednesday and Thursday in June at Portland; (3) to define "unprofessional dishonorable conduct," which is a ground for the revocation of a license, as "such conduct as would not be indulged in by an ethical physician and surgeon, under all the circumstances, taking into consideration the good of the patient and public, the time and place"; (4) to require applicants to have had at least two years' premedical education in an approved college or university, to have graduated from a medical school or college on the approved list of the Council on Medical Education and Hospitals of the American Medical Association, and to have completed an internship of at least one year in a hospital approved for internship by the American Medical Association; (5) to make it a ground for revocation for a licentiate to make false or misleading statements regarding his skill or the value of his medicine, treatment or remedy in the treatment of any disease or other abnormal condition of the human body or mind, or to advertise or hold himself out to treat diseases or other abnormal condition of the human body by any secret formula, medicine, method, treatment or procedure; (5) to specify in detail the procedure the board must follow in revoking or suspending a license, and (6) to provide that if a person is found guilty of a misdemeanor under the medical practice act a second time it will be mandatory on the court to sentence him to the county jail for not less than ten days, in addition to whatever other fine or imprisonment is permitted by the act. S. 187 proposes to make it a felony, punishable by imprisonment in the state penitentiary for not less than two nor more than five years, to provide, supply or administer to any pregnant woman any medicine or drug, or substance, or to use any instrument or other means whatsoever, with intent to procure miscarriage, unless necessary to preserve life.

Pennsylvania

Bill Introduced.—H. 161 proposes to require every physician treating or examining any person suffering from or affected with any communicable, infectious or contagious disease to report the facts to designated health authorities. The bill proposes to make it the duty of the respective health authority to whom the reports are made to remove the persons so reported from private residences and other places to the county hospital or to a state institution providing suitable care. The expense of hospitalization and isolation is to be paid by the diseased person or persons liable under existing laws for his support, but if these persons cannot pay such expenses then the care must be rendered and charges made to appropriate districts in accordance with existing law.

Texas

Bills Introduced.—H. 10, to amend the medical practice act, proposes, in effect, to permit persons to apply or use the principles, tenets or teachings of their church in the ministration to the sick or suffering by prayer without the use of any drug or material remedy and to charge fees for so doing. H. 191 proposes to authorize the organization of corporations to establish and operate nonprofit hospital service plans whereby hospital care may be provided by the corporations to their subscribers through established hospitals and sanatoriums with which the corporations may contract for such care. This bill was reported favorably to the house, Feb. 6. H. 195 proposes extensive amendments to the chiropody practice act. Among other things, the bill proposes to define a chiropodist as one "who shall treat or offer to treat or diagnose any disease or disorder, or any physical deformity or injury, or pathological case or ailment of the human foot, by any system or method, either medical, surgical, mechanical, manipulative or massage, physio-therapy, mechano-therapy, electrical appliance or any other system or method." The bill specifically proposes to prohibit a chiropodist from amputating the human foot, toe or toes or from administering any anesthetic other than local. S. 74 and H. 148, to amend the medical practice act, propose, among other things, (1) to limit licensure to citizens of the United States; (2) to prohibit the issuance of a license without examination to the holder of a foreign license if the jurisdiction issuing that license does not afford a similar privilege to Texas licentiates; (3) to require

an applicant for licensure after examination, in addition to existing educational qualifications, in effect, to have two years of premedical college work; (4) to eliminate the provisions permitting the issuance of a license to practice obstetrics alone; (5) apparently, to permit a Christian scientist to charge for his services so long as he does not maintain an office for treating the sick; (6) to add several causes for the revocation, suspension or refusal of licenses, including "The use of any advertising statement of a character tending to mislead or deceive the public," and "Advertising professional superiority, or the performance of professional service in a superior manner"; and (7) to penalize unlicensed practice by a fine of from $100 to $500 and/or imprisonment up to thirty days. The present law imposes a fine of from $50 to $500 and imprisonment up to six months. H. 144 proposes to create a State Department of Hospitalization and Medical Care to provide hospitalization and medical care for the indigent sick and indigent expectant mothers. H. 176 proposes to prohibit the operation of a hospital unless licensed so to do by the State Hospital Board, which the bill proposes to create. H. 204 proposes to appropriate $150,000 to the State Health Department to aid and assist the organization and operation of full time county health services. H. 245 proposes to authorize the board of county commissioners of any county having a population of more than 30,000 to establish and operate a hospital or sanatorium for the treatment of tuberculosis. Hospitals or sanatoriums established under the bill are to be subject to inspection by the state health officer and to such rules and regulations as the State Department of Health may promulgate with respect to them. H. 312 proposes to establish a separate naturopathic practice act and to create an independent board of naturopathic examiners to examine and license persons to practice naturopathy. The bill alleges that "Naturopathy is self-definitive to the same extent as are the terms 'Medicine' and 'Osteopathy' and is the science and art of diagnosing and treating disease by the Natural Methods, such as dietetics, fasting, heliotherapy, hygienic and corrective exercise and psycho-therapy, and the physical methods, such as mechano-therapy, massage, neurotherapy, spondylopractic, hydrotherapy, thermotherapy, electrotherapy, and phototherapy, non-surgical obstetrics, and the bio-chemical methods, such as the use of phytotherapy and the use of foods, vitamins, non-poisonous herbs, roots, barks, seeds, fruits, flowers, vegetable oils, and plants containing the tissue-building elements found in the normal body, and hygiene, sanitation, and first aid, as taught in the chartered and legally authorized schools and colleges of Naturopathy, and as shall be taught in these schools and colleges in the future." The bill further states that "The term 'Naturopathic School' shall include any school, by whatever name, teaching Naturopathy under such names as Naturopathy, Natural Therapeutics, Physiological Therapeutics, Physcultopathy, Sanipractic; and the term 'Naturopath' shall include the graduates of these schools." This bill was reported favorably in the house February 8.

Utah

Bills Introduced.—S. 85 proposes to prohibit the operation of a maternity hospital unless licensed by the state board of health. S. 180 proposes that in any action in which the mental or physical condition of a party is in controversy the court may order the party to submit to a physical or mental examination by a physician designated by the court. S. 177 proposes to authorize the organization of corporations to maintain and operate nonprofit hospital and medical service plans whereby hospital and medical care may be provided to such of the public as become subscribers to the plan.

Washington

Bill Passed.—H. 58 passed the house January 25, proposing to require every pharmacy or drug store to keep in a suitable book or file the original of prescriptions compounded or dispensed therein and preserving them for not less than five years.

Bills Introduced.—H. 100, to amend the workmen's compensation act, proposes to make compensable some twenty-one stated occupational diseases. S. 31, to abolish the office of coroner in class A and first, second and third class counties and to vest all the powers and duties of that office in the prosecuting attorney, who is to be authorized to employ licensed physicians, when necessary, to assist him in carrying out the duties formerly performed by the coroner. S. 77 proposes that whenever in a civil or criminal proceedings issues arise on which the court deems expert evidence desirable, it may appoint one or more experts, not exceeding three, to testify at the trial. The fact that an expert has been appointed by the court is to be made known to the jury. H. 199 proposes to authorize employers to enter into written contracts with third persons for providing their employees with medical and surgical treatment, nursing, hospital services or other services or care contingent on sickness or injury not covered by the industrial insurance law or medical aid act and to collect or retain a portion of their employees' wages for that purpose. H. 209 proposes to authorize the organization of corporations to conduct a so-called hospital association business. Such corporations are to be authorized to contract with individuals, families, employees, associations, societies, or with employers for the benefit of employees, for the furnishing of medicines, medical or surgical care and attention, nursing, hospital care, ambulance, dental service or any other service contingent on sickness or accident. Such corporations must obtain a license from the insurance commissioner, must have a paid up unimpaired capital of not less than $25,000 invested in the same manner as is required by law for the investment of capital stock of domestic insurance companies, must file with the insurance commissioner a bond to guarantee the performance of its contract and shall be subject to examination by the insurance commissioner. H. 4 proposes to enact a so-called "Basic Therapy Act," which undertakes to make it "unlawful for any person authorized to practice [any form of the healing art] to practice any method of healing or to use any means of treating any disease, injury, deformity or condition of health which was not taught by his respective school, college or university at the time he graduated therefrom, unless he has taken post graduate work therein or has done special research work in connection therewith or has made a thorough study thereof, in which case he is authorized to practice and use the same."

West Virginia

Bills Introduced.—S. 18 proposes to amend and reenact the narcotic drug act enacted in 1935. Among other things, the bill proposes to classify cannabis as a narcotic drug and to subject its use to the restrictions imposed by the bill on other narcotic drugs and to eliminate a section in the present law, which would by inclusion of cannabis as a narcotic drug no longer seem necessary, forbidding the retail sale or distribution of cannabis except on the written prescription of a physician, dentist or veterinarian. S. 107 proposes to authorize the organization of corporations to operate nonprofit hospital service plans under which hospital care is to be provided by a hospital or a group of hospitals, with which such corporations contract, to such persons as become subscribers to the plans. H. 156 proposes to make a physician incompetent to testify in any legal proceeding, without his patient's consent, concerning any communication made to him by the patient necessary to enable him to prescribe and treat the case. H. 183, to amend the chiropody practice act, proposes, among other things, to define chiropody, or podiatry, as "the diagnosis of foot ailments, the dressing, padding and strapping of the feet; the making of models of the feet and the palliative, medical, surgical, manipulative, electrical and mechanical treatment of functional disturbances of the feet as taught and practiced in the schools of chiropody recognized by the public health council." The bill proposes to prohibit licensed chiropodists from using the title "Doctor" without the designation "Chiropodist" or "Podiatrist."

Wisconsin

Bill Introduced.—A. 195 proposes to direct the State Board of Control to establish a chiropractic ward at the Winnebago State Hospital for the Insane in which patients of that hospital or other state hospitals for the insane may secure chiropractic service. The management and control of the proposed ward is to vest in a licensed chiropractor, who is to be responsible to the Board of Control only. The chiropractor referred to must be paid a salary equal to the salary paid the medical superintendent of the institution.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

State Health Conference.—The Arkansas State Board of Health conducted its annual health conference at Little Rock, Dec. 5-6, 1938. The speakers included:

Dr. Allen W. Freeman, Baltimore, Present Tendencies in Rural Health Organization.
Miss Katherine Lenroot, Washington, D. C., Health Needs for Mothers and Children.
Dr. Felix J. Underwood, Jackson, Miss., A Mississippi County Program of Maternal Care.
Dr. Eugene L. Bishop, Chattanooga, Tenn., Administrative Problems in Malaria Control.
Dr. William DeKleine, Washington, D. C., Working Problems Between Health Departments and the Red Cross.

CALIFORNIA

Society News.—Dr. Charles A. Dukes, Oakland, discussed "The Voluntary Health Insurance Plan of the California Medical Association" before the San Diego County Medical Society January 20. Dr. Dukes addressed the Los Angeles County Medical Association January 19 on "Progress Report on the Prepayment Insurance Plan," and Dr. Gosta Dohlman, Lund University, Lund, Sweden, "State Medicine in Sweden."

Cancer Display at Exposition. — An elaborate exhibit showing the many possible causes of cancer has been designed for the San Francisco Golden Gate Exposition. The display is under the supervision of Chauncey D. Leake, Ph.D., professor and head of the department of pharmacology, University of California Medical School; Dr. Alson R. Kilgore, San Francisco, of the California Cancer Commission, and Milton Silverman, Ph.D., director of the Hall of Science of the exposition.

Personal.—Calvin B. Bridges, Ph.D., known for his work on heredity, died in Los Angeles Dec. 27, 1938, aged 49. Dr. Bridges was active in research on the chromosome theory of heredity and sex determination. He had been a member of the staff of the Carnegie Institution since 1919 and had recently worked at California Institute of Technology, Pasadena.——Dr. Aaron J. Rosanoff, Los Angeles, member of the Los Angeles County Lunacy Commission since 1923, has been appointed director of state institutions, effective January 2. Dr. Rosanoff is a charter member and former president of the Southern California Academy of Criminology.——Dr. Norman F. Sprague, Los Angeles, has been appointed a member of the state board of health, succeeding Dr. George H. Kress, San Francisco, now secretary of the California Medical Association.

COLORADO

Annual Registration Due Before March 1.—Every licentiate of the State Board of Medical Examiners of Colorado is required by law to register annually, before March 1, with the secretary-treasurer of the board and to pay a fee of $2 if a resident of Colorado or $10 if a nonresident. Failure to pay this fee within the time stated automatically suspends the right of a licentiate to practice while delinquent. If he nevertheless continues to practice, he is subject to the penalties provided by law for practicing medicine without a license. Failure to pay this fee for three consecutive years results in the automatic cancellation of a delinquent practitioner's license to practice.

DISTRICT OF COLUMBIA

Building Program at Gallinger Hospital. — A building expansion program has been made possible at Gallinger Municipal Hospital, Washington, by a WPA grant. The project will include a medical ward building, tuberculosis building, hospital power plant, addition to the nurses' home and district morgue, the architecture of all to be in accord with the type now existing at Gallinger. The medical ward building will be six stories high with a capacity of 300 beds and has been planned to care exclusively for internal medicine, leaving the present ward building for surgical cases. The tuberculosis building, with a capacity of 225 beds, will have five stories. It will care for the local tuberculosis load, all of which is now being handled in temporary or obsolete buildings. A three story structure is planned for the nurses' home, adding thirty-nine single rooms.

FLORIDA

Changes in Health Officers. — Dr. Kolbein K. Waering, Quincy, health officer of Gadsden County, has been appointed in charge of the Duval County health unit, which has recently been placed on a full time basis. He will be succeeded in Gadsden County by Dr. Irving E. Simmons, who has been supervisor of district number 2 with headquarters in Jacksonville. Dr. William H. Ball, Tampa, has been appointed director of the recently organized health unit in Franklin and Gulf counties.

Personal.—Dr. Henry Hanson, formerly state health officer and now on the staff of the Pan American Sanitary Bureau in Guayaquil, Ecuador, was recently decorated by the Ecuador government with the Order of Merit, recognizing his services in connection with bubonic plague.——Dr. Terry Bird, Tavares, has resigned as director of the Lake County Health unit to become executive secretary of the Florida Crippled Children's Commission, with headquarters in Jacksonville. Dr. Bird graduated at Tulane University of Louisiana School of Medicine, New Orleans, in 1925.

New County Society.—The Franklin-Gulf County Medical Society was organized at a meeting in Apalachicola recently with Dr. Chapman I. Dykes, Carrabelle, president; Dr. Augustus E. Conter, Apalachicola, vice president, and Dr. Albert L. Ward, Port St. Joe, secretary-treasurer. A constitution and by-laws were adopted and a formal application was signed by the following charter members: Drs. William H. Ball, Apalachicola; Luke H. Bartee, Port St. Joe; Thomas Meriwether, Wewahitchka; James R. Norton, Port St. Joe, and the officers.

GEORGIA

The Block Memorial Lecture.—Dr. Myrtelle M. Canavan, curator of the Warren Anatomical Museum, Harvard University Medical School, Boston, will deliver the fifth annual E. Bates Block Memorial Lecture at the Academy of Medicine, Atlanta, February 23. His subject will be "Changes in the Spinal Cord in Mental Disease and Defect."

Winners of the Fischer Awards. — The annual L. C. Fischer Award of the Fulton County Medical Society was presented to Dr. William A. Smith for the best written paper; his work was entitled "Periodic Paralysis: Report of Two Fatal Cases: Review of the Literature." For the paper showing the best original research the award went to Drs. Emmett D. Colvin and Rudolph A. Bartholomew. Their paper was entitled "Behavior of the Basal Metabolism in the Course of Developing Toxemia of Pregnancy: Correlation with Cholesterol, Placental Infarcts and Retinal Examination: Study of 62 Consecutive Adolescent Colored Primigravidae." Every member of the society is eligible to compete for these prizes. Since 1925, when Dr. Luther C. Fischer established the prizes, consisting of $100 each, they have served to stimulate the members of the society in preparing better papers. Case reports, clinical talks or papers may be submitted.

ILLINOIS

Outbreak of Scarlet Fever.—A quarantine was placed on Concordia Teachers College, River Forest, January 31, on account of three cases of scarlet fever among the students; twelve students were under observation. Other students are attending classes but must avoid contacts with the public, newspapers reported February 4. Fifty day students were forbidden to go to classes.

Society News.—Dr. Delmas K. Kitchen, Detroit, discussed "Diagnosis and Treatment of Gonadal Immaturity" before the Peoria City Medical Society January 17.——At a joint dinner meeting of the La Salle and De Kalb county medical societies in Ottawa Dec. 3, 1938, Dr. Jay Arthur Myers, Minneapolis, discussed tuberculosis.——At a meeting of the Madison County Medical Society in Alton January 6 Dr. August A. Werner, St. Louis, spoke on the menopause.

Health Department Sponsors Educational Programs.—The first Southern Illinois Regional Conference was held in Harrisburg January 17-19 under the auspices of the state department of health. The conference was one of a series now being held in districts throughout the state. Mediums of reaching the public include health exhibits, talks and motion pictures. The first conference was held in Aurora in the fifth district, which embraces seventeen counties. A similar assembly convened in the tenth district, including Logan, Mason, Cass, Menard and Sangamon counties.

Chicago

Outbreak of Influenza.—Sharp increases in influenza have been reported in Chicago, newspapers announced February 11. The Lake Forest High School was closed indefinitely February 9, but no action had been taken by the board of education to close the Chicago schools. A survey made by the school board disclosed that 76,547 pupils and 982 teachers were absent February 10 from 648 public and parochial elementary schools. There were 19,326 students and 212 teachers absent from the city's thirty-eight high schools. It was stated that the student absentees were triple the average number. Newspapers reported that the incidence appeared to be higher outside the city limits.

Branch Meetings.—Drs. George L. Apfelbach addressed the Evanston Branch of the Chicago Medical Society February 2 on "Fractures of the Neck of the Femur—Causes of Nonunion"; Edmund F. Foley, "Cirrhosis of the Liver," and Thomas C. Galloway and Eustace L. Benjamin, Evanston, Ill., "Acute Tracheobronchitis."——The North Side Branch was addressed February 2 by Drs. Rudolf Schindler on "Gastroscopic Studies of Diseases of the Stomach" and Walter L. Palmer, "Clinical Course and Therapy of Gastric and Duodenal Ulcer."—— Dr. Fred M. Smith, Iowa City, discussed "Diagnosis and Treatment of Coronary Occlusion with Particular Reference to Atypical Forms" before the North Shore Branch February 7.——At a meeting of the Englewood Branch February 7 Dr. Bernard Fantus spoke on "Sulfanilamide in Coccal Infections."

Graduate Course in Syphilis.—The department of dermatology in the University of Illinois College of Medicine, cooperating with other departments, will conduct a graduate course in syphilis in the Research and Educational Hospital, 1819 West Polk Street, beginning February 27. The course, offered under a grant from the federal government with the approval of the state department of public health, will run eight weeks and consist of lectures, laboratory demonstrations and the presentation of hospital and dispensary clinical material designed to present to the practitioner a review of the subject and discussion of recent developments in this field. The course will be repeated four times a year. Applications together with a check covering the registration fee of $10, made payable to the University of Illinois, should be sent to the examiner and recorder at 1853 West Polk Street.

IOWA

Society News.—Dr. John K. Von Lackum, Cedar Rapids, was chosen president-elect of the Iowa Academy of Ophthalmology and Otolaryngology and Dr. Dean M. Lierle, Iowa City, was installed as president, succeeding Dr. Harry H. Lamb, Davenport, at the recent annual meeting. Dr. Byron M. Merkel, Des Moines, was reelected secretary-treasurer. The next annual session will be held in Iowa City in 1939. Cedar Rapids was chosen for the 1940 meeting.——Dr. John T. McClintock, Iowa City, discussed "Present Status of the Physiology of the Gastrointestinal Tract" before the Linn County Medical Society in Cedar Rapids February 9.——Drs. Donald R. Black and George H. Thiele, Kansas City, Mo., will address the Des Moines Academy of Medicine and the Polk County Medical Society March 14 on "Treatment of Diabetes" and "Clinical Manifestations of Anorectal Diseases and Their Treatment" respectively.

LOUISIANA

Special Society Elections.—Dr. William Harvey Perkins, New Orleans, has been chosen president of the Tuberculosis and Public Health Association of Louisiana, succeeding the late Dr. William H. Seemann.—— Dr. Monroe Wolf was recently elected chairman of the New Orleans Urological Society, Dr. Hugh T. Beacham vice chairman and Dr. James S. Davidson Jr. secretary-treasurer.

Personal.—Dr. George H. Hauser, New Orleans, has been appointed city bacteriologist succeeding the late Dr. William H. Seemann.——Dr. George F. Roeling has been named superintendent of the City Hospital for Mental Diseases, New Orleans, succeeding the late Dr. Lionel L. Cazenavette.—— Dr. Joseph Rigney D'Aunoy has been appointed by the Louisiana State University Medical Center to serve as a member of the board of the Guidance Center of the New Orleans Institute of Mental Hygiene, Dr. Frank R. Gomila by Mayor Maestri and Dr. John H. Musser by Tulane University of Louisiana School of Medicine.

MARYLAND

Professor McCollum Receives Manufacturers' Award.—Elmer V. McCollum, Sc.D., since 1917 professor of biochemistry, Johns Hopkins University School of Hygiene and Public Health, Baltimore, recently received the annual award of the Associated Grocery Manufacturers of America for outstanding contributions to the scientific knowledge of foods.

Society News.—The Baltimore City Medical Society was addressed January 20, among others, by Drs. Lawrence R. Wharton and Charles S. Stevenson on "Genital Tuberculosis and Pregnancy, with Special Reference to Tubal Gestation."——Dr. James M. H. Rowland, dean, University of Maryland Medical School, Baltimore, reviewed a "History of the Faculty of the University of Maryland between 1830 and 1870" before the Cordell Historical Society January 11.—— Drs. Julius Friedenwald and Samuel Morrison, both of Baltimore, recently read a paper before the Maryland Academy of Medicine and Surgery entitled "Clinical Aspects of Gastroduodenal Hemorrhage."

MICHIGAN

Undulant Fever at State College.—An outbreak of undulant fever at Michigan State College, East Lansing, caused the death of one student and the illness of about twenty-one students and as many residents of East Lansing, according to the Chicago *Tribune*, February 4.

Dr. Vaughan Honored.—Henry F. Vaughan, Dr.P.H., health commissioner of Detroit, was honored at a dinner, January 12, marking his twenty-fifth anniversary as a member of the department of health. Mr. Gustavus D. Pope, a member of the board of health since 1918, was toastmaster. A treatise written in 1561 on "Health Practices of the Time" was presented to Dr. Vaughan from the department. He also received a leather bound volume containing the signatures of all members of the department and 250 letters from persons known in medicine and public health throughout the country. Speakers at the dinner, attended by 1,025 persons, included Col. Edward D. Rich, former teacher of Dr. Vaughan and sanitary engineer at the Michigan Department of Health; Dr. Reginald M. Atwater, executive secretary of the American Public Health Association, New York; Dr. John T. Phair, chief medical officer of health in Ontario; W. Frank Walker, Dr.P.H., New York; Miss Grace Ross, Detroit, president of the National Organization for Public Health Nursing; Mr. Charles Hughes, Detroit, and Bleecker Marquette, executive secretary of the Public Health Federation of Cincinnati. Guests at the dinner included Drs. Henry A. Luce and Henry Cook, president and past president respectively of the Michigan State Medical Society; Henry R. Carstens, president, Wayne County Medical Society; Hugo A. Freund, formerly a member of the city department of health; Harold J. Knapp, health officer of Cleveland, and Fred Adams, health officer of Windsor, Ont.

NEW JERSEY

Appropriation for Pneumonia Serum.—The public health committee of the Medical Society of New Jersey recently adopted a resolution urging the legislature to appropriate $25,000 for pneumonia serum to be used in the treatment of persons unable to afford serum. An appropriation of $10,000 was made recently, but $2,200 worth of serum was used in one week. The legislature appropriated $25,000 last year.

Society News.—Dr. William J. Carrington, Atlantic City, president of the Medical Society of New Jersey, and Mr. William H. MacDonald of the state department of health addressed a meeting of the Fourth Judicial District of the Medical Society of New Jersey in December at Silver Lake Inn, near Berlin. Part of the evening was devoted to social activities. Dr. James A. Fisher, Asbury Park, is councilor for the district.——Drs. Josephine B. Neal, New York, and Frederic E. Elliott, Brooklyn, addressed the Hudson County Medical Society, Jersey City, February 7 on "Diagnosis and Treatment of Acute Infectious Diseases of the Central Nervous System in Children" and "Medical Expense Indemnity" respectively.

NEW YORK

Study of Distribution of Physicians.—Dr. Joseph S. Lawrence, Albany, executive officer of the Medical Society of the State of New York, has issued a study of the distribution of physicians in the state, tending to show that physicians and hospitals are available to all areas. The highest ratio of physicians to population was in Livingston County, where there is one physician to 1,298 persons; the lowest in Dutchess County, one physician to 478 persons. Livingston County also

has the highest ratio of general hospital beds to population, one to 1,644; the lowest was in Ontario County, one to eighty-four. The report observes that it must be borne in mind that no county is an isolated unit, so that service of physicians and hospitals of adjacent counties are always available. Improved transportation and communication in rural districts have increased the usefulness of the physician, it was pointed out, but the same conditions have led the rural resident to seek the services of the city physician except for emergencies, and in some instances this trend has induced rural physicians to move to the cities, at the same time retaining their rural practices. The study also showed that improved living conditions are attracting young men to locate in the rural areas and that there is no notable difference in the ages of the men in rural districts as compared with those in urban districts. Among other points, Dr. Lawrence's study suggested that nursing service as part of a public health program demands prompt study.

Academy Offers Lectures on Obstetrics. — The New York Academy of Medicine announces a series of lectures on practical obstetrics Wednesday afternoons, at 4:30 under the joint auspices of the academy and the Medical Society of the County of New York. The following speakers will appear:

Dr. Thaddeus L. Montgomery, Philadelphia, The Use of Analgesics in Labor, March 1.
Dr. Joseph N. Nathanson, Syphilis in Pregnancy, March 8.
Dr. Howard C. Taylor Jr., Principles of Hormone Diagnosis and Theories of Endocrine Therapy in Pregnancy, March 15.
Dr. James Burns Amberson Jr., Management of Pregnancy Complicated by Tuberculosis, and Dr. Edwin P. Maynard Jr., Heart Disease, March 22.
Dr. Albert H. Aldridge, Recognition and Management of Abnormal Presentations, March 29.
Dr. Edward G. Waters, Jersey City, N. J., Sulfanilamide and Other Therapy in the Treatment of Postabortal Sepsis, Postpartum Sepsis and Pyelitis, April 5.

New York City

The Sir Robert Jones Lecture.—Dr. Arthur Bruce Gill, professor of orthopedic surgery, University of Pennsylvania School of Medicine, Philadelphia, will deliver the Sir Robert Jones Lecture February 23 in the auditorium of the Hospital for Joint Diseases. His subject will be "Treatment of Congenital Dislocation of the Hip."

Harvey Lecture. — Dr. Edwards A. Park, professor of pediatrics, Johns Hopkins University School of Medicine, Baltimore, delivered the fifth Harvey Society Lecture of the season at the New York Academy of Medicine February 16. His subject was "The Pathology of Rickets with Particular Reference to the Changes at the Cartilage Shaft Junctions of the Growing Bones."

Society News. — Dr. George P. Muller, Philadelphia, addressed the Medical Society of the County of Kings January 17 on "Surgical Treatment of Peptic Ulcer" and Dr. Philip I. Nash delivered his inaugural address as president on "Present Day Problems in Medicine."——Dr. Benjamin Burbank, among others, addressed the Brooklyn Thoracic Society January 20 on "The Acute Abdomen During Pneumothorax Therapy."——A symposium on "Mental Disorders of Modern Times" was presented before the International and Spanish Speaking Association of Physicians, Dentists and Pharmacists January 20 by Drs. Gerald H. J. Pearson and Herbert Freed, Philadelphia; Otto Klineberg, Ph.D., Drs. George W. Henry and Stephen P. Jewett.——Dr. Henry W. Louria delivered an afternoon lecture before the Medical Society of the County of Queens January 20 on "Symptoms in the Treatment of Thyroid Disease."

OHIO

Ohio State Assembly.—The annual Post-Collegiate Assembly of the Ohio State University of Medicine will be held in Columbus March 2-4. The formal scientific program will begin Thursday afternoon March 2 with Dr. Charles A. Doan, professor of medicine, presiding. Dr. John H. J. Upham, dean of the medical school, will preside at a program summarizing research in various departments. Clinical talks by faculty members will be presented Friday morning, followed by round table discussions for the rest of the day. Friday evening Dr. Logan Clendening, Kansas City, Mo., will deliver the annual Alpha Omega Alpha Lecture on "The Doctor in Art, Literature and Music." Guest speakers will present the program Saturday morning at the Deshler-Wallick Hotel as follows:

Dr. Lowell A. Erf, New York, The Effects of New Drugs in the Treatment of Pneumonia.
Dr. Arthur W. Thomas, chief, bureau of child hygiene, state department of health, Cooperating with the Physicians of Ohio.
Dr. Joseph A. Johnston, Detroit, Factors Which Affect Growth.
Dr. Virgil S. Counseller, Rochester, Minn., Ovarian Neoplasms, Their Pathological and Surgical Significance.

This meeting will be followed by the alumni reunion luncheon, at which Dr. Charles T. Atkinson, Middletown, president of the medical division of the alumni association, will preside. The final session at St. Francis Hospital Saturday afternoon will feature talks by Drs. Leslie Bigelow, Columbus, on his association with the late Dr. Starling Loving, former head of the medical college, and Jonathan Forman, Columbus, on the laying of the cornerstone of the St. Francis Hospital and the Starling Medical College ninety years ago. The committee in charge of the assembly consists of Drs. Upham, ex officio; Russel G. Means, chairman; Jonathan Forman, secretary-historian; Charles A. Doan, Verne A. Dodd, Herbert M. Platter, Noel Paul Hudson and Isaac B. Harris.

OREGON

Society News.—The Grants Pass Chamber of Commerce entertained the Josephine County Medical Society at a luncheon meeting Dec. 5, 1938, at which Dr. Clariel L. Ogle, Grants Pass, presented views of organized medicine and Dr. Charles L. Coyle, Grants Pass, recent attempts to control syphilis. ——Dr. Hans Lisser, San Francisco, addressed the Central Willamette Medical Society, Eugene, recently on "The Manifold Indications for and Proper Use of Thyroid Substance." ——Dr. John H. Hutton, Portland, addressed the Lane County Medical Society, Eugene, Dec. 16, 1938, on "Newer Methods in Anesthesia."

PENNSYLVANIA

Society Sponsors Poster Contest.—The Medical Society of the State of Pennsylvania will for the second time sponsor a health poster contest among school children. The contests will be managed by the county medical societies and the prize-winning posters in the county contests will be entered in competition at the next annual meeting of the state society in Pittsburgh in October. It is believed that the health poster contest tends to bring school children and the family physician into closer contact and gives the children an appreciation of the part played in community health by the county medical society.

Philadelphia

General Ireland Gives Potter Memorial Lecture.—Major Gen. Merritte W. Ireland, U. S. Army, retired, will deliver the William Potter Memorial Lecture at Jefferson Medical College February 23 on "Medicine's Debt to the United States Army." General Ireland was surgeon general of the army from 1917 to 1931.

SOUTH CAROLINA

Personal.—Dr. Wofford E. Baldwin, formerly of Chester, health officer of Chester County, has been transferred to Oconee County.——Dr. Henry R. Perkins, Rockmart, Ga., has been appointed health officer of Abbeville and Laurens counties.

District Society Meeting.—The Second District Medical Association held its annual meeting in Columbia January 26 with the following speakers: Drs. Claude C. Coleman, Richmond, Va., on "Management of Acute Head Injuries"; Paul H. Culbreath Jr., Ellenton, "Congenital Hemolytic Jaundice," and Lucius Emmett Madden, Columbia, "Coronary Thrombosis."

Annual Bennettsville Meeting. — The Marlboro County Medical Society held its annual New Year meeting and banquet in Bennettsville January 10. On the scientific program the speakers were Drs. Arthur H. London Jr., Durham, N. C., on "Treatment of Pneumonia in Children"; Joseph Decherd Guess, Greenville, "Some Observations Concerning Practical Obstetric Practice"; Frank K. Boland, Atlanta, Ga., "Diseases of the Colon," and William H. Kelley, Charleston, "Management of the Anemias." After dinner speakers were Drs. James R. DesPortes, Fort Mill, president, and Edgar A. Hines, Seneca, secretary of the South Carolina Medical Association, and Mayor Throop C. Crosland of Bennettsville.

TENNESSEE

Venereal Disease Clinic for Negroes.—A new clinic for care of Negroes with venereal disease was opened in Knoxville recently with Dr. Frank A. Faulkner as director and Dr. Napier A. Henderson, Negro physician, as assistant. An allotment of $6,000 from federal funds made the clinic possible.

Society News. — Drs. Paul H. Dietrich and Jesse B. Swafford addressed the Hamilton County Medical Society, Chattanooga, Dec. 15, 1938, on "Roentgen Consideration of Nontuberculous Chest Lesions" and "Inversion of Sex Instinct

and Its Relations to Insanity" respectively. —— William B. Wendel, Ph.D., and Dr. James W. McKinney addressed the Memphis and Shelby County Medical Society Dec. 6, 1938, on "The Clinical Significance of Methemoglobinemia" and "Transplantation of the Cornea" respectively.

VIRGINIA

Graduate Course in Ophthalmology and Otolaryngology.—The University of Virginia sponsored its fifth postgraduate course in ophthalmology and otolaryngology in the medical school, Charlottesville, December 6-9. The instructors were Drs. Clarence H. Smith, New York; Chevalier L. Jackson, Philadelphia; Ebenezer Ross Faulkner, New York; Romeo A. Luongo, Philadelphia; Harry S. Gradle, Chicago; Grady E. Clay, Atlanta, and James W. White, New York.

Dr. McGinnes Goes to Tennessee. — Dr. Goldsborough Foard McGinnes, Richmond, director of the bureau of communicable diseases in the state health department for seven years, has resigned to become director of a venereal disease project sponsored by the Tennessee State Department of Health, the U. S. Public Health Service and the University of Tennessee at Memphis, with the cooperation of Memphis and Shelby County. In addition, he will be associate professor of preventive medicine at the University of Tennessee College of Medicine. Dr. McGinnes, who graduated from the University of Virginia Department of Medicine, Charlottesville, in 1925, was health officer of Isle of Wight County for a time. After a year at the Johns Hopkins University School of Hygiene and Public Health he served three years as director of laboratories for the state department of health before appointment to his present position.

WASHINGTON

Society News.—Dr. Ralph H. Loe, Seattle, addressed the Spokane County Medical Society, Spokane, January 9 on gastroscopy.——Dr. Karl F. Meyer, director of the George Williams Hooper Foundation of the University of California, San Francisco, addressed the Walla Walla Valley Medical Society at its annual dinner in Walla Walla, January 12, on "The Animal Kingdom—A Reservoir of Disease."——Dr. John Guy Strohm, Portland, Ore., addressed the Cowlitz County Medical Society, Longview, Dec. 21, 1938, on "Diagnosis and Treatment of Kidney and Bladder Stones." —— Drs. Souren H. Tashian and Roger Anderson, Seattle, addressed the Lewis County Medical Society, Centralia, Dec. 12, 1938, on the Gruskin test for malignancy and a new clavicle splint, respectively.

GENERAL

Dr. Hartwell Joins Cancer Society Staff.—Dr. John A. Hartwell, New York, who recently resigned as director of the New York Academy of Medicine after four years in the position, has been appointed associate director of the American Society for the Control of Cancer. He will assume the new work April 1.

Changes in National Society Staff.—Lewis H. Carris, managing director of the National Society for the Prevention of Blindness, New York, assumed the title of general director January 1, with Mrs. Winifred Hathaway as associate director. Mrs. Eleanor Brown Merrill, formerly secretary and an associate director, became executive director.

Fraudulent Salesman and Repair Man. — From Ohio comes a report of a man calling himself Halsey, offering to repair syringes, surgical instruments and apparatus and taking orders for equipment. One physician placed an order and paid in advance. Several weeks passed without word of the order. The physician wrote to Halsey at his alleged address, Halsey and Company, 1209 Broad Street, Pittsburgh, and the letter was returned unclaimed.

New Health Publications.—The Metropolitan Life Insurance Company announces several new and revised pamphlets which it will supply in limited quantities to social and health agencies and other professional groups in connection with health programs that involve the planned use of literature. The pamphlet "Protecting Your Heart" has been revised with the cooperation of the American Heart Association. "Colds, Influenza and Pneumonia" has been revised with more emphasis on pneumonia. "A New Day in Health Protection" is based on the company's motion picture on pneumonia "A New Day." Another publication is "When You Are in Your Teens," directed to growing boys and girls; it contains suggestions for stimulating the appetite and securing the greatest good from food, with outlines of meal plans.

Indexes for Medical Literature.—Central card catalogs of medical libraries are being made in various cities with the aid of workers provided by the Works Progress Administration. The first of the series of catalogs was launched in Philadelphia, where a catalog of about four million volumes has been established at the Pennsylvania Historical Society. The second was made at Cleveland, where the union catalog lists about two million books and is housed in Thwing Hall at Western Reserve University; it includes not only Cleveland libraries but others at the University of Cincinnati, Ohio State University, the University of Michigan and the Clements Library at Ann Arbor, Mich. At Washington, D. C., a catalog has been made at the Library of Congress. The latest in the series is in Boston, which will be housed in the Boston Medical Library. It is planned to enlarge the Boston project to include the medical collections in Worcester County.

Southeastern Surgical Meeting.—The tenth annual assembly of the Southeastern Surgical Congress will be held in Atlanta at the Hotel Biltmore, March 6-8. Among the guest speakers will be:

Dr. Walter Alvarez, Rochester, Minn., Hints in the Treatment of Gastrointestinal Disease.
Dr. William Wayne Babcock, Philadelphia, Interior Exteriorization in Abdominal Surgery.
Dr. Meredith F. Campbell, New York, Urologic Surgery in Children.
Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, Fads and Quackery in Healing.
Dr. George W. Crile, Cleveland, Surgical Treatment of Essential Hypertension.
Dr. Henry H. Kessler, Newark, N. J., Rehabilitation of the Physically Handicapped.
Dr. Ambrose L. Lockwood, Toronto, Canada, Surgical Life Guards.
Dr. Austin A. Hayden, Chicago, Hearing Aids—Old and New.
Dr. George Gray Ward, New York, Uterine Displacements.

Dr. Irvin Abell, Louisville, Ky., President of the American Medical Association, will deliver the C. Jeff Miller Memorial Lecture.

New Group to Advance Pharmacy as a Profession.—A newly organized Association for the Advancement of Professional Pharmacy held its first open meeting in New York January 24 with Henry V. Arny, Ph.D., former dean of the Columbia University School of Pharmacy, as the guest of honor. Dr. Arny delivered an address on "The Development of the Professional Pharmacy Movement." According to an announcement the constitution of the new association requires members to have a registered pharmacist in charge at all times, to refer all requests for advice other than pharmaceutic to a member of the public health profession involved and to maintain the professional appearance of the pharmacy at all times. Among other requirements, members must not maintain food service. Among the purposes of the organizations were listed the following: to educate the public to the dangers of self medication, to assist the public to a better understanding of the services of the health professions, to encourage more interest in the prescribing of official preparations and to assist in maintaining uniform standards of requirements and ethics.

Congress on Obstetrics and Gynecology.—The American Congress on Obstetrics and Gynecology, to be held in Cleveland September 11-15, has announced a preliminary outline of the program. The professional groups that will take part in the congress are those interested in and concerned with the problems of human reproduction, maternal welfare and neonatal care. They include medical, nursing, public health and institutional administrative groups. In the mornings there will be special programs for each organization group and subgroups; at noon round table discussions; in the afternoons joint sessions for all members of the congress, and in the evenings sessions for all members, with speakers of national prominence. Subjects for the afternoon sessions are announced as follows: neonatal care, plans for prevention and control of uterine cancer, extension education on maternal and neonatal care, economic aspects of maternal care and on the last day a correlation and digest of the proceedings. Evening sessions are outlined: legal aspects of maternity, Monday; humanitarian aspects, Tuesday; sociologic aspects, Wednesday, and ethical aspects, Thursday. The membership fee is $5, which includes a year's membership in the American Committee on Maternal Welfare. Checks should be made payable to Dr. Rudolph W. Holmes, treasurer, and sent to the headquarters office, 650 Rush Street, Chicago. Both scientific and technical exhibits are being developed.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 21, 1939.

Asthma Research

The report of the Asthma Research Council for the year ended Oct. 31, 1938, has been published. The research clinic at Guys Hospital reports two noteworthy observations: 1. The results of general treatment without specific treatment are at least as good as the results of general treatment combined with specific desensitization to inhalant proteins and better than those of desensitization alone. 2. There is further evidence of the importance of the psychologic factor, this time in the effects of treating rhinorrhea with physiologic solution of sodium chloride alone. The startling fact was that these were slightly better than those of protein desensitization. Thus the psychologic element was found to be of even greater importance than was anticipated. The conclusion from the five years work of the clinic is that protein desensitization and vaccine therapy have not proved sufficiently successful, but they will be continued to see if the methods can be improved.

On the other hand, desensitization has given satisfactory results at the Asthma Clinic of St. Mary's Hospital. It is performed either by self inoculation (the patient being given a set for use at home) or by "rush inoculation" (for which he is admitted to the hospital). The reliability of cutaneous reactions was called in question at the last meeting of the Asthma Research Council. The clinic holds that this depends largely on how the tests are carried out. In their opinion they should be only prick tests made vertically down to the cutis vera through the pathophane which is being tested, and this pathophane must usually be as strong as possible. Thus the minimum of surgical intervention is combined with the maximum of pathophane reaction. The false positive reactions which seem to be the bugbear of some asthma clinics are in this way avoided. To simplify the process of desensitization, which at present requires some forty injections, an attempt is being made to alter chemically the antigen so that the dose can be more rapidly increased without undue reactions. To this end an albumin protein complex has been obtained from timothy pollen which has a skin reactive potency of 1 in 5 million and yet retains its hay fever specificity.

At St. Thomas's Hospital the value in asthma of respiratory exercises and short wave therapy to the nose and chest have been investigated. In the majority of cases chronic rhinorrhea rapidly cleared up under this treatment and there was a relapse in only a small percentage. The results were better from this combination than from respiratory exercises alone. The latter generally diminished both the intensity and the frequency of the attacks but did not affect any nasal infection present. Similarly, if the precipitating factor, such as an infected antrum, was alone treated by short wave therapy, without breathing exercises, the asthmatic mechanism of the chest remained and attacks were just as severe when some other precipitating factor appeared. The best results were obtained by the combination of exercises and short wave therapy to the antrums, and in the presence of severe bronchitis great relief followed short wave therapy to the chest. Attention to the general health was the only additional treatment. Cod liver oil was given to children under weight.

Air Raid Precautions

Air raid precautions continue to be the burning question of the day. This densely populated country, in which more than half the population is urban, offers an abundance of targets for such attacks as are now witnessed in China. The ministry of health has set up a special department to prepare hospital accommodation, to advise on equipment and to control medical personnel. London is a special problem. It and the surrounding counties have been divided into three zones. In a crisis the inner zone hospitals will remove their ordinary patients to make room for mass surgical procedures, evacuating the wounded to the outer zone as soon as possible after operation. The outer zone hospitals will be placed in situations of reasonable safety and will act as base hospitals. Some of them will be set apart as special centers, neurologic, orthopedic and so on. First aid parties to the number of from twelve to fifteen per hundred thousand of population, each provided with an automobile, are being organized to collect casualties from the streets or other places. They will send the slightly injured home, those who require treatment as walking wounded to first aid posts and those who are stretcher cases by ambulance to the casualty clearing hospitals, which will normally be the local hospitals. On the threat of air attack these hospitals will be freed by evacuation to outlying hospitals of all patients who can be moved. Base hospitals will be in rural areas out of the danger zone and will retain casualties evacuated from the casualty clearing hospitals. It is anticipated that it may be necessary to use buildings other than existing hospitals for this purpose. The official estimate of casualties has never been published, but various unofficial estimates have been made. For London they vary from 100,000 in twenty-four hours downward. On the outbreak of war the child population will at once be evacuated from London and the large industrial centers and be billeted in the houses in rural areas, of which a survey has already been made.

Assisting Academic Refugees

The Society for the Protection of Science and Learning, of which the late Lord Rutherford was president, has rendered great service in finding posts for refugee scholars and researchers. The German persecution has made the continuance of its activities necessary. Meetings will soon be held in all academic centers to promote its work and protest against further threats to intellectual liberty and the freedom of academic life. At the same time the Royal Society will hold a reception for academic exiles in this country as a sign of its sympathy and approval of the work. During the five years of its existence the Society for the Protection of Science and Learning has received active support of university staffs in Great Britain. Individuals and committees have lent assistance to exiled colleagues. There is practically no college or university which is not harboring at least one refugee. Balliol College, Oxford, has voted $5,000 to be spent in assisting exiled scholars, and Christ Church has put aside $900 a year for three years, in addition to what they were already doing. Glasgow University has made an appeal to its staff for a special levy, and at Edinburgh Prof. Dover Wilson will give a special series of lectures on behalf of the assistance funds. Among those who will take part in the meetings are Sir William Bragg (president of the Royal Society), Sir Henry Dale, F.R.S., Professor Gilbert Murray and Sir Richard Gregory.

Prof. Rutherford Morison

The death of James Rutherford Morison in his eighty-sixth year has removed a great surgeon and teacher. The son of a physician, he was born in Durham on the fringe of a colliery district. He studied medicine in Birmingham and Edinburgh, where he qualified in 1874. The early death of his father made it necessary for him to begin practice, which he did in Hartlepool, where he became physician to the local hospital. After fifteen years of general practice he moved to Newcastle, where he was appointed assistant surgeon to the Royal Infirmary. His originality and great teaching power

soon made him famous and he was appointed professor of surgery at the university. As a surgeon he was twenty years ahead of his time. In the late eighties he was doing gastrectomies and colectomies and introduced the method of removing a growth from the lower part of the colon by producing intussusception with an anal tube. Foreign surgeons visited his clinic, remote though it was from London. Long before Crile described his method of clearing the neck, he was doing elaborate dissections for malignant disease of the lip and mouth. He introduced the operation of omentopexy for the radical cure of ascites. The Dutch surgeon Talma had also conceived the idea of producing this collateral circulation, but it was Morison who had the first success. In the great war he introduced what is known all over the world as "bipp" as a prophylaxis against and a cure for wound sepsis. This is a paste consisting of iodoform two parts, bismuth subnitrate one part and paraffin sufficient to make a paste. Its advantage was that a septic wound could, after cleansing, be filled with the paste and sutured without drainage and would heal under a single dressing. The Thomas splint, as the first aid measure for gunshot fractures of the femur, and "bipp" are important advances which have survived the great war.

Of his many publications he is best remembered for his "Introduction to Surgery," a remarkable book reflecting his genius as a teacher. His object was to aid students in thinking out for themselves the problems presented in the wards. His method was the consideration of general principles and their application. Though it appeared as long ago as 1910, it is still popular in its third edition, produced with the assistance of his pupil Prof. C. M. Saint.

PARIS

(From Our Regular Correspondent)

Jan. 14, 1939.

Clinical Aspects of Endometriosis

At the Dec. 14, 1938, meeting of the Académie de chirurgie of Paris, Drs. Gaston Cotte and J. Mathieu of Lyons reported their observation of seventy-eight cases of endometriosis, confirmed by microscopic examination. There was a single localization in sixty-one cases and multiple localizations in the others. Single localization includes diffuse endometriosis of the uterus twenty-eight cases, of the tubes thirteen cases, of the ovaries eight cases and of the pelvic peritoneum seven cases.

The diagnosis of endometriosis presents many difficulties. When the endometriosis is only an associated condition, no special treatment is indicated but there are cases in which the symptoms are functional and will not be relieved unless the endometriosis is eliminated. Certain symptoms should arouse suspicion, such as dysmenorrhea several years after puberty or in the premenopausal period. The pain occurs on the second or third day of menstruation and not before menstruation, as is customary in dysmenorrhea. A similar clinical history is observed only with certain uterine malformations when a circumscribed hematometra is present, just as it is with certain endometrioses. A dysmenorrhea of the type just described was noted in 75 per cent of the cases. Vaginal examination is of only indirect aid. The presence of pale blue nodules in the posterior culdesac has been considered an important observation, but such nodules are rarely found. The palpation of irregular nodules on the uterosacral ligaments also speaks for endometriosis, but it must be remembered that in certain cases of parametritis similar nodules are found.

Even when a diagnosis of endometriosis has been made the question arises as to whether radical or conservative measures should be employed. The localization is of aid in making a decision. With peritoneal localization, if the lesion is small and circumscribed it can be left because there is usually a more important associated condition, such as retroversion or uterine fibroid tumor, which needs attention. Tubal endometriosis may not give rise to any symptoms and be found only on microscopic study. In some cases such a localization may give rise to a hematosalpinx or favor an extra-uterine pregnancy. In only one of eight cases of ovarian endometriosis was this condition the cause of late dysmenorrhea. Such late dysmenorrhea was noted in four of sixteen cases of uterine localization and is of diagnostic value.

Endometriosis, although not to be considered as being of a malignant character, is a steadily progressive lesion whose evolution can be checked only by a natural or artificial menopause.

OPERATIVE MEASURES

Cotte and Mathieu were opposed to any radical operative measures as advocated by some gynecologists. In over half of their cases, conservative operations sufficed. The administration of ovarian substance only aggravates the symptoms. One should be very sure of the diagnosis before beginning radiotherapy, as premature castration, when the diagnosis was wrong, would be very regrettable.

In cases of endometriosis with multiple localizations, bilateral oophorectomy is indicated. Hysterectomy should be done only if there is an associated lesion in the uterus. Rectovaginal adenomyomas are especially serious localizations of endometriosis. The authors have had very good results following subtotal hysterectomy with removal of both tubes and ovaries.

For the peritoneal forms as associated lesions it suffices to treat these lesions. If the treatment is not successful, more radical measures are indicated.

For localized adenomyoma of the uterus, resection can still be done, but if the lesion is diffuse only hysterectomy can be considered. With tubal endometriosis, the involved tube should be removed. In cases of bilateral involvement the uterus and one ovary should be conserved. With unilateral or bilateral ovarian endometriosis, every effort must be made to conserve an ovary.

Subacute Bacillus Funduliformis Septicemia

Only twenty-seven cases of Bacillus funduliformis septicemia following acute pharyngitis and tonsillitis have been thus far reported. At the Oct. 28, 1938, meeting of the Société médicale des hôpitaux of Paris a case was reported by Dr. Brulé and his co-workers of subacute septicemia due to this bacillus, which had developed after severe pharyngitis. A man aged 34 was admitted to the hospital with marked prostration, rapid pulse and slight icterus, which appeared out of proportion to the condition of the throat. The bacteriologic examination failed to reveal the presence of diphtheria bacilli. During the next two days there were repeated chills, a high blood urea content and albuminuria. Bacillus funduliformis was found in the blood cultures on the first and following days. Death occurred four days after admission. Permission for a necropsy could not be obtained.

Lemierre, Reilly and Laporte in a recent article state that a high blood urea content, marked albuminuria, and very marked leukocytosis are found in cases of B. funduliformis septicemia as evidence of renal involvement.

In the discussion of Dr. Brulé's paper, Dr. Lenègre reported a case of severe B. funduliformis infection in a woman aged 23. The symptoms appeared several months after an attack of pharyngitis. The chief clinical features were recurrent high temperatures and severe diffuse pain, sometimes in the abdomen and sometimes in the extremities, with blood cultures positive for B. funduliformis. These symptoms receded rapidly after intravenous injection of a preparation containing iodine, methenamine and sodium salicylate.

BERLIN

(From Our Regular Correspondent)

Jan. 9, 1939.

The Society of Natural Scientists and Physicians

The annual congress of the Society of Natural Scientists and Physicians convened in September at a time of political high tension. This society is distinguished not only for its venerable age but for the opportunities it offers for collaboration between the natural sciences and medical science. Various societies of scientific specialists usually hold their respective congresses just before or just after the larger gathering.

The first general session was dedicated to the problem complex "Climate and Life." Ludwig Weickmann of Leipzig delivered the introductory lecture. As first medical speaker, Prof. Bernhard de Rudder of Frankfort on the Main spoke on "Season and Weather in Human Biology." He stated that an initial, direct, clinically observable group of bioclimatic phenomena in man is to be found in the sharply fluctuating seasonal incidence of numerous types of disease. There is no general principle which makes these manifestations comprehensible; rather, each particular, empirically established observation requires separate interpretation. Many seasonal increases in the morbidity of a disease are found to be conditioned by recurrent seasonal external circumstances, which are however quite often not completely recognizable at first glance (for example tularemia and measles). We have recognized the need for assembling all known factors in the genesis of an illness, as well as the great danger that, in study of the seasons problem, omnipresent formal and anatomic correlations may be misinterpreted as etiologic. Nevertheless climatic factors directly affecting human beings are not infrequently first recognizable as such only after more penetrating analysis of their action. Such an influence is best illustrated by the high summer mortality of nurslings, which has been proved a direct result of warm weather. We are just beginning to recognize certain incretory reactions to the estival irradiation, which are especially manifest in an intensified degree in the female organism. Thence a bridge leads to an annual endocrine cycle, the initiation of which appears to take place chiefly through ultraviolet irradiation. Through these channels certain seasonal predispositions to illness appear to come into being.

A second group of meteorobiologic phenomena relate to the "weather pains" which synchronize above all with the appearance of weather fronts and which also relate to the accumulation of a large number of well circumscribed disease entities. The latter often originate in a completely nonspecific manner in that the weather fronts burden the sympathetic nervous system whereas the type of nervous reaction of the individual will depend on his particular physical condition at the particular time. The "biotropic weather front factor" active in such cases is not yet understood; it appears, however, to be related to the descent of air masses, which produce quick changes in water vapor. There seem to participate therein certain atmospheric properties, not yet understood, which in turn affect the human being.

CLIMATE AND RHEUMATISM

Siegfried Dietrich of Berlin spoke on "The Hereditary Conditionality and the Climatic Conditionality of Rheumatic Disorders." The infection present with these disorders plays a subordinate part; more important are the hereditary constitution, the regular changes in the somatic constitution and the modifying influence of environment. Hereditary conditionality is manifested in rheumatic fever, which, as a familial accumulation, can often be observed through several generations and even under the most varying living conditions. Important familial tendencies to the diseases which precede rheumatic fever have been observed, for example a high familial incidence of tonsillitis. However, there exists in addition a linking with other constitutionally conditioned diseases (and allergies in particular), so the tendency to become infected with rheumatic fever may conceivably depend on many hereditary factors. The incidence and form of manifestation of rheumatic fever change regularly according to the patient's age. The youthful groups are particularly imperiled. The tendency to rheumatic fever is observed in all races, although there are slight racial differences in the pathologic diathesis. The geographic distribution of rheumatic fever varies even among people of the same race inhabiting different quarters of the globe. Rheumatic fever is virtually unknown in tropical America, whereas beyond each tropic to the north and to the south the morbidity gradually increases. Even within Germany there are regional differences in the morbidity, which tend to remain constant for decades. Certain communities have also been found which are peculiarly suitable for the early climatic therapy of rheumatic fever. The salubrious advantages of such places may be confined to an extremely restricted zone, which may be surrounded by a region particularly unfavorable for rheumatic patients.

THE WHITE RACE AND THE TROPICS

The closing paper, on "Adaptability of a Human Being to a Climate Inimical to His Particular Race," was read by the Heidelberg hygienist Prof. Ernest Rodenwaldt. Although the European as an individual may tolerate the tropical climate even under the most trying circumstances, it is doubtful whether he could adapt himself to the tropical climate for long uninterrupted periods or for a lifetime without any pathologic disturbances. Rodenwaldt adduced as a classic illustration of his view that in six milleniums of world history there is no single instance of a successful assimilation of light skinned European races by a hot climate. For Europeans the great danger of tropical diseases has by now been largely if not completely abolished. However, this by no means signifies that the influence of climate has at the same time become unimportant. Individuality here plays a considerable part. Persons whose sympathetic nervous systems are weak or who are allergic encounter greater difficulties than the average. Practical experience has demonstrated, however, that healthy Europeans of every constitutional type between the ages of 20 and 60 can live under the usual conditions offered by colonial life in the tropics without manifestation of constitutional disturbances. But without certain modifying conditions individual acclimatization is impossible; hence the necessity for intermittent furloughs home. Such furloughs may be dictated by psychic considerations as well.

"GIANT MOLECULES"; "RACE AND CLIMATE"

The chief theme of discussion at the second general session was "Giant Molecules." Other problems taken up at this session were "Protein Synthesis in Physiologic and Pathologic Life" and "Myosin Substances."

Genetics was discussed in the principal medical section. The first speaker was Prof. Fritz Lenz of Berlin, on "Race and Climate." The decisive factor for extinction or survival occurs only in small part through direct climatic influences; climate is much more likely to act as an indirect influence wherein the cultivating effect of ecologic living conditions is of the utmost importance for the racial differentiation. On these bases Lenz develops a theory of ethnogenic selective factors. In his opinion parasites, and microparasites in particular, represent an ethnogenic factor of selection. For example, the selection of malaria, a disease which among inhabitants of tropical lands is usually a childhood disease of quite low mortality, suffices to keep tropical races resistant to malaria. Lenz maintains that the selective process appears to be related indirectly and directly to pigmentation. The more dark skinned the race, the greater its general resistance to malaria. Lenz has come to believe that the dark pigmentation of the colored races is in good part produced by malaria. According to this view the greater resistance of colored races against malaria should not be considered as immunity in the stricter sense but as hereditarily conditioned resistance. Lenz conjectures that, just as malaria may genetically conduce toward dark pigmentation of a race, tuberculosis

may conduce toward a light skin. In every part of Europe under the influence of the Gulf Stream the tubercle bacilli take the place, so to speak, of Plasmodidae as ubiquitous microparasites. Lenz estimates the number of permanent carriers of the tubercle bacillus as at least one third of mankind. Light exerts a recognized prophylactic and curative effect on tuberculosis. Consequently, since fair skin is more permeable to light than dark skin, the fair skin of European races has been preeminently cultivated through tuberculosis. This is not to say that races can be modified at will by climatic or environmental influences. Modifications of the breed through climate affect relatively superficial characters. The matrix of the sum of heritable factors of a race is not conditioned by climate.

His report and the few other congress reports on similar topics all attest the controvertible nature of these questions. Accordingly it is extremely important that problems of ethnogeny should be presented to learned bodies for discussion.

BUCHAREST

(From Our Regular Correspondent)

Dec. 15, 1938.

Malaria Therapy in the Patient's Home

Dr. Mihail Kraus, neurologist at Timisoara, read a paper at the local medical society on the application of malaria therapy in the patient's home. It was the general opinion that, owing to the unpredictable course of malaria therapy, it should be induced only in institutions where nurses and medical help are always available. Of course, patients with excessive fever and profuse sweating need careful nursing, but this can be assured just as well in a private home. In cases of mania institutional treatment is most suitable because in a home one cannot guarantee the cessation of an irritational condition and the possibility of the occurrence of hallucinations and epileptiform seizures must be reckoned with. When these complications can be expected, home treatment is not desirable. But in the simply demented and melancholic forms, in incipient dementia paralytica and in tabes malaria treatment in the home can be administered without any fear of untoward consequences. In the Vienna clinics not one case of fatal induced malaria has been recorded. What deaths occurred were due to terminal or galloping paralysis. It is advisable to exclude from home treatment very fat or emaciated or very old persons and those suffering from advanced arteriosclerosis, severe myocarditis, hepatic and renal disease, tuberculosis and decompensated heart disease. Satisfactorily compensated valvular diseases form no contraindication to home treatment but require careful control of the heart for the sake of avoiding collapse.

To shorten the incubation period in home treatment, malaria inoculations should be given intravenously and if there is an intelligent person in the house he should take the temperature hourly from the commencement of fever attacks and place compresses on the head and trunk when the fever is highest and at the outset of sweating should give some cardiac stimulant (strophanthus, digitalis or digalen). The attending physician should see the patient as often as his time allows, but at least twice a day. If the patient's strength is considerably deteriorating and disturbances of the pulse rate occur, or if anemia and jaundice are marked, it is time to stop the fever by the administration of quinine. In view of all this Kraus concluded that physicians may safely undertake to perform malaria therapy in private homes.

Social Conditions of School Children in Rumania

Dr. G. Banu made a clinical, anthropologic and social-hygienic study on 2,149 school and nursery children, of whom 1,611 were urban and 538 rural dwellers and 1,107 were boys and 1,042 girls. In every case the nutritional condition, the relation between height, weight and age, the foods consumed, the causes of undernourishment and the presence of tuberculosis and syphilis were studied. The results of the clinical examination, the Pirquet reaction, the Wassermann reaction, radiography and analysis of the feces were recorded on a chart specially compiled by Dr. Banu. A third of the children had more than four living brothers or sisters. In 8.2 per cent of the cases the parents suffered from some chronic disease: 12.4 per cent of them were orphans, having no father, while 1.6 per cent of the children had neither father nor mother; 62 per cent of the children lived in unhygienic dwellings; only 8.7 per cent had their own rooms; 21 per cent of the children had their own bed and 46.6 per cent shared their bed with another and 17.7 per cent with two others.

Program of the Supreme Public Health Council

Under the presidency of M. Marinescu, minister of public health, a meeting was held recently and it was decided to carry out in the near future the following program: 1. Regulations will be elaborated according to which the members of the Orthodox Rumanian Monks shall be trained to be able hospital nurses. 2. Plans will be made for the installation of a huge storehouse for public health materials and drugs. 3. New regulations will be compiled for teaching the technic of embalming and also the preparation of the solutions used. 4. In the matter of contraceptives, it was resolved to forbid their use and all propaganda in connection with them. On the other hand all drugs and appliances which serve the purposes of antivenereal propaganda are permitted, and their sale in chemists' and druggists' shops is allowed. 5. As to the campaign against scarlatina, it was resolved that, until a reliable method of vaccination is adopted, compulsory vaccination will be introduced only in some heavily infected cities and that antiscarlatinal vaccines which have been proved harmless after thorough investigations will be used.

The Review of Foreign Diplomas

As I wrote in a previous letter, all foreign diplomas issued since the World War have been subjected to review. The commission had to review about 3,500 diplomas, which entailed much work. It found that, with the exception of a few diplomas issued at some obscure foreign universities, all were in order. In about a score of instances, and particularly in the case of Italian diplomas, it was found necessary for holders to pass supplementary examinations on one or two subjects, such as public hygiene, pharmacology and forensic medicine.

Marriages

CHAUNCEY JOHNSON PATTEE, Montreal, Que., Canada, to Miss Barbara Russell Stearns of New Canaan, Conn., Sept. 10, 1938.

RAYMOND LESTER OSBORNE, Orangeburg, N. Y., to Miss Margaret Forbes Unangst of Westwood, N. J., January 22.

EDWARD WILLIAM PHIFER JR., Morganton, N. C., to Miss Mary Adair Edwards of Orlando, Fla., Nov. 5, 1938.

WILLIAM A. MAYNARD, Coleman, Mich., to Miss Mildred Bruskotter of Saginaw in December 1938.

JOHN H. KENDALL, Richlands, N. C., to Miss Bessie Mae Hood in Washington, D. C., at Takoma Park, Md., Nov. 3, 1938.

LADISLAUS JOHN KUNSCH, Naperville, Ill., to Miss June McNeeney of West Chicago, Oct. 1, 1938.

HOMER S. PARKER, McMechen, W. Va., to Miss Cora G. Sullivan of Moundsville, Sept. 4, 1938.

LUCIUS BRAINERD KEELS, Lynchburg, S. C., to Miss Evelyn Plowden of New Zion, at Sumter, Nov. 26, 1938.

MILTON MORTIMER KENDALL, New York, to Miss Ann Philo of Youngstown, Ohio, Nov. 24, 1938.

ARTHUR J. MERRILL, Atlanta, Ga., to Miss Sara Harrison of Birmingham, Ala., Nov. 25, 1938.

THOMAS M. MULCAHY to Miss Ethel Mildred Harlow, both of New York, Nov. 12, 1938.

LOUIS H. MUTSCHLER to Miss Isabelle Carleton Graves, both of Philadelphia, January 4.

Deaths

William Thomas Black ✠ Memphis, Tenn.; Memphis Hospital Medical College, 1898; professor of gynecology at the University of Tennessee College of Medicine; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Southern Surgical Association, Central Association of Obstetricians and Gynecologists and the Southeastern Surgical Congress; fellow of the American College of Surgeons; on the staffs of the Baptist Memorial, St. Joseph and Memphis General hospitals; past president of the Memphis and Shelby County Medical Society and of the Memphis Obstetrical and Gynecological Society; on the advisory editorial board of the *American Journal of Obstetrics & Gynecology;* aged 63; died, Dec. 10, 1938.

Henry du Rest Phelan ✠ Major, U. S. Army, retired, Alameda, Calif.; University of California Medical Department, San Francisco, 1893; Université de Paris Faculté de médecine, France, 1903; veteran of the Spanish-American and World wars; entered the medical corps of the regular army as a first lieutenant March 15, 1927, and was retired on the same date for disability in line of duty; in June 1930 was promoted to major under a special act of Congress; aged 70; died, Nov. 22, 1938, in the Letterman General Hospital, San Francisco.

William J. V. Deacon, Lansing, Mich.; Eclectic Medical University, Kansas City, Mo., 1917; director, bureau of records and statistics, Michigan Department of Health, and formerly epidemiologist; associate professor of preventive medicine at the University of Kansas, 1913-1918, lecturer on vital statistics, University of Michigan, Ann Arbor, 1921-1933, and the Wayne University, Detroit, since 1927; in 1929 a member of the U. S. Delegation to the International Conference for Revision of List of Causes of Death, Paris; aged 64; died, Dec. 20, 1938, at his home in East Lansing, of heart disease.

John H. Murray, Punxsutawney, Pa.; Medico-Chirurgical College of Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania; member of the House of Delegates of the American Medical Association in 1924 and 1927; past president of the Jefferson County Medical Society; aged 71; on the staff of Adrian Hospital, where he died, Nov. 16, 1938, of bilateral nephrosis with uremia.

Elizabeth Catherine O'Hearn, Shenandoah, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1927; member of the Medical Society of the State of Pennsylvania; on the staff of the Locust Mountain State Hospital; aged 36; died, Nov. 11, 1938, in the University Hospital, Philadelphia, of septicemia following sticking of her finger, November 2 while incising a carbuncle.

Thomas Ulysses McManus, Waterloo, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; member and past president of the Iowa State Medical Society; fellow of the American College of Surgeons; Otolaryngologist to the Allen Memorial Hospital and St. Francis Hospital; aged 65; died, Nov. 5, 1938, of pneumonia.

Daniel Franklin Heilman ✠ Northumberland, Pa.; Medico-Chirurgical College of Philadelphia, 1899; past president of the Northumberland County Medical Society; past president of the board of health; formerly bank president and medical examiner of the public schools; on the staff of the Mary M. Packer Hospital, Sunbury; aged 62; died, Nov. 28, of embolism.

Aloysius John Blakely, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1927; was an associate in pediatrics at his alma mater; on the staffs of St. Luke's Children's, St. Joseph's and St. Mary's hospitals; aged 40; senior in the department of pediatrics at the Hahnemann Hospital, where he died, Nov. 27, 1938, of heart disease.

Heman Lincoln Chase, Alstead, N. H.; Harvard University Medical School, Boston, 1887; member of the Massachusetts Medical Society; formerly member of the board of health of Brookline, Mass.; for many years on the staffs of hospitals in Boston, Worcester and Danvers, Mass.; aged 79; died, Nov. 17, 1938, of cerebral thrombosis.

Joseph Oscar Dicks, West Chester, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; fellow of the American College of Surgeons; on the staff of the Chester County Hospital; aged 63; died, Nov. 14, 1938, of coronary thrombosis.

John Henry Page ✠ Austin, Pa.; University of Buffalo School of Medicine, 1902; fellow of the American College of Surgeons; past president of the Potter County Medical Society; attending surgeon to the Coudersport (Pa.) Hospital; aged 61; died, Nov. 26, 1938, of coronary heart disease.

Jesse Samuel Lancaster ✠ Torrance, Calif.; Northwestern University Medical School, Chicago, 1910; on the staff of the Jared Sidney Torrance Memorial Hospital; aged 55; died, Nov. 5, 1938, in a hospital at Los Angeles.

Walter C. Rosser, Lynchburg, Va.; University College of Medicine, Richmond, 1896; member of the Medical Society of Virginia; aged 63; died, Nov. 24, 1938, in the Memorial Hospital, of malignancy and tuberculosis.

Willoughby Heath Tebbs Ranshaw, Covington, Ky.; Miami Medical College, Cincinnati, 1907; served during the World War; aged 54; died, Nov. 28, 1938, in St. Elizabeth Hospital of mitral regurgitation.

John H. Owens, Sweet Springs, Mo.; Hospital College of Medicine, Louisville, Ky., 1897; member of the Missouri State Medical Association; aged 80; died, Nov. 10, 1938, of coronary thrombosis and myocarditis.

Robert Alvin McLurg, Wilkie, Sask., Canada; Trinity Medical College, Toronto, Ont., 1904; member of the school board; past president of the Saskatchewan Medical Association; aged 60; died, Nov. 5, 1938.

Martin Luther Wagner, Peru, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; served during the World War; aged 61; died, Nov. 30, 1938, of heart disease.

David H. Carson, Kerrville, Texas; John A. Creighton Medical College, Omaha, 1905; member of the State Medical Association of Texas; aged 61; was found dead with a gunshot wound, Nov. 2, 1938.

Frederick Henri Gatien, Montreal, Que., Canada; Laval University Medical Faculty, Montreal, 1907; formerly on the staff of the Hospital St. Joseph, Lochine, Que.; aged 55; died, Nov. 14, 1938.

Jay Standley Terrill, Bedford, Iowa; Ensworth Medical College, St. Joseph, Mo., 1906; member of the Iowa State Medical Society; aged 56; died, Nov. 17, 1938, of rheumatic heart disease.

George Edward Clerk, Montreal, Que., Canada; Laval University Medical Faculty, Montreal, 1911; served with the Canadian Army during the World War; aged 61; died, Nov. 15, 1938.

Joseph Alonzo Peterson, Oak Park, Ill; Chicago College of Medicine and Surgery, 1908; aged 63; died, Nov. 4, 1938, in a hospital at Chicago of cerebral hemorrhage and acute nephritis.

William H. Allen, Rich Hill, Mo.; Louisville (Ky.) Medical College, 1871; member of the Missouri State Medical Association; formerly mayor; aged 90; died, Nov. 8, 1938, of heart disease.

Andrew Bell Wilkie, Darrtown, Ohio; Cincinnati College of Medicine and Surgery, 1902; served during the World War; aged 75; died, Nov. 6, 1938, of chronic nephritis and fractured hip.

Lucien Daniel Clark, Cleveland Heights, Ohio; Toledo Medical College, 1898; served during the World War; aged 72; died, Dec. 3, 1938, of bulbar paralysis and cerebral hemorrhage.

Sarah A. Poindexter Bent, Narberth, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1893; medical missionary; aged 70; died, Nov. 27, 1938, near Norristown.

John Joseph Winn ✠ Norwood, Ohio; Medical College of Ohio, Cincinnati, 1885; aged 80; died, Nov. 4, 1938, in the Good Samaritan Hospital, Cincinnati, of coronary thrombosis.

Otto G. Waskow, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 62; died, Nov. 16, 1938.

John H. Neill, Westfield, N. Y.; University of Maryland School of Medicine, Baltimore, 1889; aged 82; died, Nov. 13, 1938, of cardiorenal vascular sclerosis.

Ray G. Hill, Wamego, Kan.; Hahnemann Medical College and Hospital, Chicago, 1889; member of the Kansas Medical Society; aged 79; died, Nov. 25, 1938.

George Brown Mills, Athabaska, Alta., Canada; Trinity Medical College, Toronto, Ont., 1896; aged 70; died, Nov. 17, 1938.

Charles Wesley Shannon, Bonne Terre, Mo.; Missouri Medical College, St. Louis, 1895; aged 81; died, Nov. 4, 1938.

Ulysses G. Lipes, Indianapolis; Fort Wayne (Ind.) College of Medicine, 1885; aged 74; died, Nov. 21, 1938, in Lafayette.

Max Heller, Brooklyn; Fordham University School of Medicine, New York, 1919; aged 54; died, Oct. 28, 1938.

John B. Washburn, Delmar, N. Y.; Albany Medical College, 1882; aged 81; died, Nov. 27, 1938, of pneumonia.

Bureau of Investigation

THE GEORGE A. EDAM FRAUDS

The Sabo Painless Hair Remover Fake

From two memorandums addressed to the Postmaster General from the office of the Solicitor of the Post Office Department and, in part, from material on file in the Bureau of Investigation of the American Medical Association comes the story that follows of a mail-order quack, one George A. Edam of Cleveland.

In 1925 Edam began selling through the mails a device called "Sabo Painless Hair Remover." It was a small cylinder about 3 inches long with a metal plunger at one end and metal jaws at the other end. When the plunger was depressed the jaws were extended to grasp an unwanted hair. A trigger at the plunger end released a spring tension that caused the jaws to close and automatically jerk back into the cylinder, pulling from the skin the hair caught in the jaws. In other words the Sabo Painless Hair Remover was merely a convenient method of using tweezers and if sold under truthful claims might have been comparatively unobjectionable.

Edam, who was a wood and metal pattern maker, originated his device with the idea of extracting hairs from portions of the body where they were unwanted and then attempting to deposit such hairs in the scalps of bald-headed persons! But as the experiment in cranial hirsuticulture proved a failure Mr. Edam confined his talents to selling his device for removing hair. He obtained his victims in the orthodox way, by the

THE SABO PAINLESS HAIR REMOVER
Only instrument that removes superfluous hair permanently and painlessly. No drugs. No chemicals. Not a needle. Entirely automatic. $3.00 brings it parcel post with money back guarantee. Descriptive literature free.
THE EDAM MFG. CO., 3123 Scranton Road, Cleveland, O.

"placing of advertisements in certain periodicals and magazines." One of Edam's advertisements is reproduced on this page; it appeared in Macfadden's *Physical Culture* for July 1929.

Edam sold his device under two claims that were false: First, he claimed that it would remove hair "painlessly"; second, that it would remove hair "permanently." It did neither. As long ago as May 1934 the Federal Trade Commission announced that George A. Edam, trading as the Edam Manufacturing Company, had agreed to cease describing his device as one that would permanently remove hair. But Mr. Edam's agreement evidently was made in a pickwickian sense, for he continued for some years to advertise that his tweezers would remove hair permanently.

Three years after the Federal Trade Commission had announced Mr. Edam's promise to tell the truth, the Post Office Department in July 1937 notified the Edam Manufacturing Company to show cause why a fraud order should not be issued against it. But Mr. Edam by this time apparently thought that the federal government was an innocuous affair, for neither he nor his company put in any appearance. The Post Office Department through its Acting Solicitor thereupon sent to the Postmaster General a memorandum recommending that a fraud order be issued against the Edam Manufacturing Company; the mails were closed to the concern Aug. 17, 1937.

Did that faze Mr. Edam? It did not! True, the Edam Manufacturing Company could collect no mail, but all Mr. Edam had to do—and did do—was to pluck out of the vasty deep another trade name and continue to bilk the sufferers from hypertrichosis. The new trade name was "Sabo Manufacturing Company," which carried on the business for about a year. Then, following still another memorandum from the Solicitor's office, the Postmaster General on Aug. 26, 1938, issued another fraud order closing the mails to the Sabo Manufacturing Company.

Whether Mr. Edam will think up another trade name under which to do business remains to be seen.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BRONCHIAL ASTHMA AND HEART FAILURE

To the Editor:—It is understood that right heart failure is often the cause of death in chronic bronchial asthma. Would digitalis therefore be indicated to "pep up" the failing muscle?

HERMAN WECHSLER, M.D., Bronx, N. Y.

ANSWER.—The query is based on a premise which is highly controversial. Several clinical conditions may be followed by failure of the right side of the heart and "asthma" may be but a part of the syndrome, though decidedly not a cause of the circulatory dysfunction. For example, miners' asthma commonly follows such a sequence. Antemortem as well as postmortem examinations may help to clarify the situation. Electrocardiographic studies of fifty cases of bronchial asthma revealed evidence of right ventricular preponderance in but 20 per cent of the series (Kahn, M. H.: *Am. J. M. Sc.* **173**:555 [April] 1927). In another series (Colton, W. A., and Ziskin, Thomas: *M. Bull. Vet. Admin.* **13**:117 [Oct.] 1936) of eighty-four cases the heart was normal on clinical examination in seventy-nine. Electrocardiographic studies on fifty-six of the eighty-four subjects disclosed myocardial involvement in 20 per cent. In several of these the circulatory dysfunction antedated or was unrelated to bronchial asthma. Six of the total series were examined post mortem; four presented a normal heart, one may have had the cardiac abnormality before or coincident with the symptoms of asthma, and the sixth patient was said to have a slight degree of chronic exudative inflammation of the myocardium. Both left and right ventricular hypertrophy have been reported in a majority of eight cases (Macdonald, I. G.: *Ann. Int. Med.* **6**:253 [Aug.] 1932).

On the opposite side of the controversy one finds laboratory as well as clinical evidence (Alexander, H. L.; Luten, Drew, and Kountz, W. B.: The Effects on the Heart of Long-Standing Bronchial Asthma, THE JOURNAL, March 19, 1927, p. 882) that the heart remains singularly free from injury after continuous bronchial asthma despite the attendant emphysema. This contention is supported by more than 100 necropsies (Lamson, R. W., and Butt, E. M.: Fatal "Asthma," THE JOURNAL, May 29, 1937, p. 1843. Thieme, E. T., and Sheldon, J. M.: *J. Allergy* **9**:246 [March] 1938). It appears, therefore, that in no more than from 20 to 33 per cent of patients with asthma can the right side of the heart be implicated. This condition might be the cause of death in a small proportion of such a group.

There are a few generally accepted indications for the use of digitalis, but they do not include "right heart failure." The drug is not without toxic properties and in addition it may add to the discomfort and disability of the patient with asthma. The value of digitalis as a prophylactic against cardiac insufficiency or to "pep up" the failing heart muscle in any patient is likewise a moot question.

DISCHARGE FROM UMBILICUS

To the Editor:—What can be done for an offensive discharge from the umbilicus during menstruation? I have two patients, single women, one 17 and the other 23. I have tried to pass a probe but there appeared actually to be no duct in the umbilicus.

HOWARD M. COOPER, M.D., Rutherford, N. J.

ANSWER.—Nearly always an offensive discharge from the umbilicus is due to lack of thorough cleanliness. In many women, especially obese ones, the umbilicus is deep and unless the tip of a wash cloth or a cotton applicator is used to reach the bottom of the navel, secretions from the skin remain and give rise to a foul odor.

Since in the cases described the discharge is not bloody, the condition is not due to endometriosis. Likewise since the discharge does not contain urine there is no patent urachus from the bladder to the umbilicus. The association with menstruation may be due to the increase in perspiration which some women experience during the menses. It may also be due to the fact that the patients do not bathe at this time, because many women still fear to take cleansing baths while they menstruate. The umbilicus should be thoroughly scrubbed with soap and water just as any other part of the body; but in women who perspire freely it requires special manipulation to keep clean and inoffensive.

ANGIONEUROTIC EDEMA WITH LINGUAL AND OPTIC INVOLVEMENT

To the Editor:—A single woman aged 40, without past medical history of importance, has for two years suffered attacks of swelling and numbness of the left cheek and swelling and numbness of the tongue. The tongue in an hour or so appears covered by blisters, which disappear however and the next day the tongue is coated, swollen, shaggy and numb on the affected side. The last attack, one week ago, was accompanied by sudden blindness in the right eye. No other symptoms accompany the attacks; the swelling and numbness of the cheek and tongue last two or three days and then disappear. Physical examination is negative. Laboratory examination of the urine and blood are negative. The fundus of the eye is normal; the visual tests reveal a blind spot which persists ten days after attack. Any suggestions would be appreciated.

RICHARD H. LYON, M.D., Seattle.

ANSWER.—The patient in all probability has an acute circumscribed edema, also known as angioneurotic edema. This condition was described as early as 1778 by Salpertus, in 1801 by Crichton, in 1848 by Graves, in 1872 by Milton and in 1882 and 1904 by Quincke. It is also known as Quincke's edema. The patient also has the type known as lingual bullosa, in which the tongue becomes covered with multiple vesicles. The blindness is due to a swelling of the optic nerve head. The most important characteristic of this entity is its tendency to appear without reason and after a few hours or days disappear only to return again at some later time. The edema may involve any part of the body, but usually the skin, the subcutaneous tissue and occasionally the mucous membranes are most often affected. The prognosis is extremely dangerous in cases of edema of the glottis because the patient may become asphyxiated unless intubation or tracheotomy is done at once. There is no special treatment. Overeating, worrying and restlessness should be corrected. Tenseness, panic and emotional states should be prevented if possible. Various foods should be eliminated from the diet if such foods are found to produce an attack (allergic). Epinephrine, ephedrine or amphetamine sulfate should be given for the acute attack if possible. Application of ice to the swelling if it is in the eyelid, cheek, lip or parotid gland will be found to be helpful in reducing the size of the swelling as well as its duration. It is suggested that a textbook on neurology be consulted for further description.

RECURRENT BOILS FROM ARSENIC COMPOUND

To the Editor:—A mosquito control crew has been using the following modification of a weed killing compound manufactured by the Chipman Chemical Company of Bound Brook, N. J.:

Active ingredients:	
Dicalcium arsenite, not less than	83.33%
Consisting of	
Arsenous oxide, not less than	50.00%
Total arsenic (as metallic) not less than	37.87%
Water soluble arsenous oxide, not more than	4.00%
Water soluble arsenic (as metallic) not more than	3.03%
Inert ingredients: not more than	16.67%

To this standard compound has been added 10 per cent by weight of sodium arsenite. The mixture is dissolved in water and sprayed on the hyacinths. The proportion used is approximately 4 pounds of the mixture to 50 gallons of water. After about a week's exposure to the solution the operators became affected with boils, mainly on their arms and chests. After about a week's rest the condition of the men improved noticeably. It appears, therefore, that working with this compound may have some effect on the men which will result in a recurrence of the boils. Please advise whether the continued use of this compound would be detrimental in any way to the health of the men exposed to it.

T. R. GRIFFIN, M.D., St. Petersburg, Fla.

ANSWER.—The condition described leads to the presumption that arsenic is the source of the disorder, although neither the nature nor the distribution of the dermatitis is characteristic. However, Rayer (A Treatise on the Theory and Practice of Skin Diseases, Paris, 1826-1827) as early as 1826 described pustulous skin disorders produced by arsenic compounds. In time, the terms "arsenic pock" or "arsenic pox" came into wide use. Usually a dermatitis, following exposure to arsenic-bearing dusts or sprays, is present about the eyelids, base of the nose, neck, armpits, elbows, hands and groins rather than on the chest. Also the lesion customarily is essentially papilliform, followed by ulceration, commonly associated with deep pigmentation and at times followed by keratosis or even neoplastic growth. As to arsenical furunculosis, White (Occupational Affections of the Skin, London, H. K. Lewis & Co., Ltd., 1934) states: "Infection rapidly changes papules and vesicles into pustules, which readily burst and the contents reinfect the skin. Pimples and boils then become the prevailing type. Moisture, friction and continued irritation of the arsenic lead to ulcers." Continued exposure is not warranted in the absence of protective measures unless arsenic can be ruled out as the offending agent. These afflicted workers should be examined for other evidences of arsenic poisoning, such as disturbances of the digestive, renal and circulatory systems.

HAY FEVER AND VITAMINS

To the Editor:—In the July 10, 1932, issue of *Industrial and Engineering Chemistry* (New Edition) appeared an article by K. Kitsuta of the Ohio Agricultural Experiment Station, Wooster, Ohio, entitled "Hay Fever as a Symptom of Vitamin Deficiency." This article outlined a cure for hay fever consisting of the daily ingestion of four teaspoonfuls three times daily of cod liver oil plus a cake of yeast. Do you know anything of the present status of this treatment and whether or not further work has been done on it?

CARL P. SHERWIN, M.D., New York.

ANSWER.—Since vitamin therapy has been tried in almost every disease it is but natural that it should be attempted in hay fever. Crandall and Feinberg (*J. Allergy* **5**:515 [July] 1934) gave daily doses of thirty drops of viosterol 250 D to a series of hay fever patients without any noticeable effect. Rappaport, Reed, Hathaway and Struck (*ibid.* **5**:541 [Sept.] 1934) reported favorable results from the use of enormous doses of vitamin D in the form of irradiated ergosterol. Apparently these large doses were helpful in conjunction with the regular desensitization therapy. Their experience together with the experiences of others seems to indicate that doses of vitamin D of that magnitude may produce toxic and perhaps even dangerous symptoms. The use of cod liver oil in the doses mentioned by the inquirer has been employed by many physicians without any notable results. In unpublished work carried on at the Allergy Department of Northwestern University Medical School the following vitamin products in ordinary doses have produced no beneficial results in hay fever: vitamin A (carotene and fish oils); vitamin B (brewers' yeast); vitamin C (ascorbic acid); vitamin D (viosterol and fish oils).

UNUSUAL MIGRAINE

To the Editor:—A woman aged 35 has been having what has been diagnosed as attacks of migraine ever since 1932. Before an attack she has a depressed feeling, which is soon followed by an excruciating headache. The location of the pain varies from time to time. Sometimes it begins on the right side of the head and goes to the left; again it starts on the left and extends to other parts of the head. During the attack she feels nauseated and vomits occasionally. Without efforts at relief this headache has lasted as long as four or five days, gradually wearing off. Furthermore, during the attack light aggravates it. In 1930 the patient had a tonsillectomy, after which it was necessary to stop the hemorrhage by suturing. In 1932 she had an appendectomy; the ovaries have not been touched. About two weeks after this operation the first attack of headache began. She did not have another until three years later; then the headaches began to precede each menstrual period. After a few months the headaches began to follow menstruation. During the past year the attacks have appeared twice weekly. A neurologist performed a spinal fluid test as well as a complete neurologic examination and found everything negative. He gave her five typhoid injections without effect; his diagnosis was migraine. An internist then had her skull as well as her gastrointestinal tract roentgenographed with negative results except for the finding of a curved surgical needle at the right angle of the left jaw. He treated her for six months by means of estrogen without any benefit. The patient was finally placed in a hospital for observation and treatment, where she remained for six weeks. After a thorough examination nothing organic was found except the needle. She was advised to have the needle removed, although she is not conscious of its presence. Ergotamine tartrate (gynergen) gave her relief at first, but its efficacy soon wore off. Now she obtains some measure of relief from neogynergen. Its effect, however, is also showing signs of diminishing.

M.D., New York.

ANSWER.—The patient described as having attacks of migraine presents the following unusual points: "onset" after an appendectomy, the presence of a surgical needle at the angle of the left jaw, and gradual diminution of the therapeutic efficacy of gynergen and more recently neogynergen. If, as stated, the ovaries were not damaged during the operation, the subsequent appearance of the attacks of migraine is most likely coincidental. The needle likewise is probably not productive of the attacks. It should, however, be removed because it may be a source of irritation to the adjacent sympathetic chain.

It is presumed that gynergen is progressively less effective in stopping each succeeding attack and that neogynergen is likewise less effective in aborting or terminating attacks. Neither is of value in preventing the recurrence of migraine headaches. It is unusual for either to lose their value. If either did so, it would be expected that neogynergen would fail first because as a rule it is about half as effective as gynergen. Apparently no other instances of developed tolerance to ergotamine have been noted. These facts cause one to suspect (1) an approaching menopause, (2) an increase in the psychogenic aspect of the problem or (3) a progressive organic lesion, such as cerebral aneurysm or neoplasm.

The migraine syndrome is often the summation of abnormalities in the endocrine, psychic, allergic and other fields, resulting in intracranial vasomotor fluctuations. Each field should be thoroughly investigated and any abnormalities corrected.

Small doses of emmenin three times a day have been found effective in diminishing the frequency of attacks in similar cases.

Large doses of other estrogens are apparently no more, if as, effective. The avoidance of offending allergens is helpful in a few cases. A thorough oculomotor investigation is to be recommended. A constant watch must be maintained for the development of intracerebral masses either neoplastic or vascular. Psychotherapy is of great value in almost all cases. A cure is unusual, but improvement is the rule under successful psychotherapy. Most often this is in the nature of correction of superficial conflicts and maladjustments. Frequently too much dependence on the physician and his treatment lowers the patient's resistance to pain and increases the frequency of the complaints. As a last resort, temporal artery ligation might be recommended. This is usually reserved for purely unilateral hemicranial attacks.

In the empirical field it has been observed that 4 Gm. of calcium from once to three times a day often diminishes the frequency and severity of attacks and permits of the use of a smaller dose of gynergen.

A more complete discussion of this problem may be found in:

von Storch, T. J. C.: The Migraine Syndrome, *New England J. Med.* **217:** 247 (Aug.) 12) 1937.

The Migraine Syndrome, *M. Clin. North America* **22:** 689 (May) 1938.

PERIPHERAL NEURITIS FOLLOWING APPENDICITIS

To the Editor:—Two weeks ago a white woman aged 22, single, presented herself with the complaint of pain in the lower right quadrant, preceded by nausea and vomiting. General physical examination was essentially negative. There was definite tenderness over McBurney's point, also rebound tenderness. Pelvic examination was essentially negative. The past history was negative except that she described three previous similar attacks. The white blood cell count showed 14,500 with a preponderance of large mononuclears. At this time there was no neurologic examination made. The patient was admitted to the hospital and under ether anesthesia was operated on. Through McBurney's incision a definitely acutely inflamed appendix was removed, showing many adhesions from previous attacks. The preoperative temperature was elevated to 99 F. The pulse rate was 80. The respiratory rate was not accelerated. The pathologic report on the appendix confirmed the diagnosis. The patient had an uneventful recovery up to the sixth day after operation. At this time she casually complained of some pain in the anterior region of the right thigh. On the following day she was discharged from the hospital and at that time she announced that she could not move her right leg. On examination she had a bilateral loss of knee jerk and negative Babinski, Oppenheim and Chaddock signs. She had a sensory loss to a level of the crest of the ilium. However, she retained her saddle sensation. Her temperature sense was not examined. The paralysis was of a flaccid type complete. At no time since the second postoperative day had her white blood cell count been more than 7,500. The red blood cell count and the hemoglobin were within normal limits. There was also an absence of knee jerk on the left leg. In summary, a febrile woman with all laboratory and neurologic examinations, except those mentioned, negative developed a flaccid paralysis of the right lower extremity on the seventh day after operation, with sensory loss up to the brim of the pelvis. Please advise me as to the possibilities, whether of organic or functional origin, and what I might expect from this patient.

M.D., Alabama.

ANSWER.—The condition is peripheral neuritis following an infection, in this case appendicitis. Pain in the right leg, followed by paralysis of the flaccid type, with loss of reflexes and impaired sensation, later extending to the other extremity, is entirely characteristic of a lesion of the nerve trunks. The unilateral onset, the flaccidity instead of spasticity, the absence of sphincter weakness and the loss of the reflexes place the lesion outside the spinal cord. The signs, moreover, indicate unmistakably organic disease. The only important things missing in the history are the electrical reactions of the paralyzed muscles and the report on the spinal fluid. A reaction of degeneration in the muscles and an increase in the amount of protein in the spinal fluid would be expected.

Prognosis in this type of infectious neuritis is usually good. Recovery, however, will be delayed, perhaps even to months. Treatment should be directed toward preservation of the affected musculature while regeneration of the nerves takes place. Overstretching should be avoided, by splints if necessary, especially for foot drop, if this is present. A plaster shell, cut in halves and well padded, makes a comfortable support for the leg in bed. Some simple apparatus should be applied to the shoe when the patient becomes ambulatory. External massage is helpful and many believe that galvanic stimulation of the muscles, causing them to move, is the best form of "internal" massage. Polar changes by galvanism and the return of the faradic response, moreover, are valuable indicators of recovery and aid in the week by week prognosis. The prevention of overstretching and the maintenance of tone, therefore, are the most important factors in caring for the paralyzed muscles.

To increase rapidity of regeneration of the nerves, a diet high in vitamins, possibly with B_1 added, is in tune with modern therapy. In cases of this type, evidence of the efficiency of vitamin therapy is not entirely clear. One must assume an inherent or acquired deficiency, which allows this patient to become a victim of neuritis, unlike the vast majority of patients who have acute or chronic appendicitis. Treatment by vitamins, however, with our present state of knowledge, is to be recommended.

RESPIRATORY FAILURE IN NEWBORN

To the Editor:—A normal, full-term fetus delivered by an elective cesarean section exhibited complete respiratory failure and died. Autopsy by a competent pathologist revealed grossly only atelectasis of the lungs, which was judged to be secondary in nature. A study of the cerebral cortex for evidence of cellular alteration by anoxemia is to be attempted. Twelve hours and eighteen minutes before anesthesia was begun the mother received one dose of sodium amytal 3 grains (0.2 Gm.). Two hours and three minutes before anesthesia was begun, morphine sulfate one-sixth grain (0.01 Gm.) with atrophine sulfate 1/150 grain (0.0004 Gm.) was administered; nitrous oxide-oxygen-ether anesthesia was given by a competent physician anesthetist. Twenty-three minutes elapsed from the beginning of the anesthesia to the beginning of the operation, twenty-seven minutes from the beginning of the anesthesia to the delivery of the fetus. A second cesarean section by the same operating group and the same anesthetist under similar medication with morphine and the same anesthesia resulted in a cyanosed infant which was resuscitated but developed inhalation (aspiration) pneumonia. The same operating group with other anesthetists, but with the same medication and the same anesthetics, has over the past two years experienced no fetal complications. Discussion appears directed chiefly to the preoperative medication, to the anesthetic itself and to the amount of oxygen necessary to prevent anoxemia.

M.D., New York.

ANSWER.—The failure of the respiratory function in the newborn following delivery by cesarean section may be due to several factors. In the first place, narcosis may diminish the sensitivity of the respiratory center or cause a complete cessation of respiratory movements so that this function is not resumed at birth. The various analgesic and anesthetic drugs produce varied degrees of narcosis, depending on the character of the drug and the amount of it used. The barbiturates are more likely to produce a prolonged narcosis in the newborn than are the opiates. The second factor in asphyxia is the anoxemia produced by inhalation anesthetics. Here again the degree of anoxemia would depend on the anesthetic agent used. Snyder and Rosenfeld have shown experimentally in animals that the fetus requires at least 15 per cent oxygen in order that the respiratory movements are not interfered with. Less than 10 per cent oxygen produces an immediate suppression of fetal respiration, which may or may not be permanent, depending on the duration of the anoxemia. Thus, nitrous oxide must be administered with at least 15 per cent oxygen in order to avoid fetal anoxemia. This mixture in itself without the addition of ether will not produce anesthesia in the mother.

When a combination of narcosis and anoxemia exists, the danger of respiratory failure at birth is definitely increased. The exact valuation of the roles of the preoperative medication and the anesthesia in the production of fatal asphyxia of the newborn cannot be ascertained in each instance. Prompt and effective methods of resuscitation will reduce the incidence of serious or fatal asphyxia.

References:

Snyder, F. F., and Rosenfeld, Morris: *Am. J. Obst. & Gynec.* **36:** 363 (Sept.) 1938.

Snyder, F. F., and Rosenfeld, Morris: Intra-Uterine Respiratory Movements of the Human Fetus, THE JOURNAL, June 5, 1937, p. 1946.

Rosenfeld, Morris, and Snyder, F. F.: *J. Pharmacol. & Exper. Therap.* **57:** 139 (June) 1936.

Shute, Evan, and Davis, M. E.: *Surg., Gynec. & Obst.* **57:** 727 (Dec.) 1933.

PERIRECTAL SINUS AND EMPLOYABILITY

To the Editor:—Precedents are desired with regard to the employability of a person having a perirectal sinus presumably of tuberculous origin. The discharge is slight. There are no other open tuberculous lesions. The patient's state of health is stabilized and he is considered physically able to carry on his former work. Are esthetic and hygienic considerations so serious that his former employer should consider him unfit to work with other employees and to use the same lavatories? He belongs to the white collar class.

M.D., New Jersey.

ANSWER.—No precedents have been found to interfere with the employability of a person having a perirectal sinus due to tuberculosis, without other demonstrable lesions.

BIBLES IN BRAILLE

To the Editor:—I have been asked to get a braille Bible for a blind patient but so far have not been able to locate a supply house that handles these books or knows where to get them. Could you tell me where I could acquire one?

JOHN T. FRANCE, M.D., Findlay, Ill.

ANSWER.—Bibles in braille are available at the American Printing House for the Blind, 1839 Frankfort Avenue, Louisville, Ky.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Basic Science.* Tucson, March 21. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix, April 11-12. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Medical (Regular).* Little Rock, June 8-9. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, 317 State Line, Texarkana. *Medical (Eclectic).* Little Rock, June 8-9. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written examinations.* San Francisco, July 10-13, and Sacramento, Oct. 16-19. *Oral examinations* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, March 22, Los Angeles, August 7, and San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, April 5-7. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Medical (Regular).* Hartford, March 14-15. *Endorsement.* Hartford, March 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic).* Derby, March 14. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, June 26-27. *Medical.* Washington, July 10-11. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 19-20. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Joint Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, April 4-7. Address Dir., Bureau of Occupational License, Rm. 355, State Capitol Bldg., Boise.

ILLINOIS: Chicago, April 11-13, June 20-22, and Oct. 17-19. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 20-22. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Basic Science.* Des Moines, April 11. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, State Department of Health, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 20-21. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, June 7-9. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, March 14-15. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical (Regular).* Baltimore, June 20-23. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, June 20-21. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, March 14-16. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Ann Arbor and Detroit, June 14-16. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, April 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, April 18-20. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, June. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, April 4-5. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science.* Omaha, May 2-3. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, March 9-10. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Trenton, June 20-21. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, June. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Building, State Education Department, Albany.

NORTH CAROLINA: Raleigh, June 19. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.

OREGON: *Basic Science.* Portland, Feb. 25, Corvallis, July 8, and Portland, Oct. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia and Pittsburgh, July. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 7. Sec., Dr. O. Costa Mandry, Department of Health, San Juan.

SOUTH CAROLINA: Columbia, June 27. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Rapid City, July 18-19. Director, Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

VIRGINIA: Richmond, June 21-23. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, March 6-8. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science.* Madison, April 1. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Milwaukee, June 27-30. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, February 11, page 573.

Rhode Island October Examination

Mr. Robert D. Wholey, chief, Division of Examiners, reports the oral, written, and practical examination held by the Board of Examiners in Medicine at Providence, Oct. 6-7, 1938. The examination covered 20 subjects and included 50 questions. An average of 80 per cent was required to pass. Six candidates were examined, five of whom passed and one failed. Four physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine		(1937)	86
Harvard University Medical School		(1936)	87
Jefferson Medical College of Philadelphia		(1936)	86
McGill University Faculty of Medicine		(1936)	87
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1936)	82

School	FAILED	Year Grad.	Per Cent
Johns Hopkins University School of Medicine		(1936)	76

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Georgetown University School of Medicine		(1936)	N. B. M. Ex.
Tufts College Medical School		(1937)	N. B. M. Ex.
Temple University School of Medicine		(1932)	N. B. M. Ex.
Hamburgische Universität Medizinische Fakultät		(1932)	N. B. M. Ex.

Florida November Examination

Dr. William M. Rowlett, secretary, State Board of Medical Examiners, reports the examination held in Jacksonville, Nov. 14-15, 1938. Seventy-four candidates were examined, fifty-six of whom passed and eighteen failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1934)	75, 83.3
Yale University School of Medicine		(1907)	77.9
Georgetown University School of Medicine		(1937)	76.6
Emory University School of Medicine		(1934) (1935) 79.5, (1938) 78.5, 80.5, 82.5, 83.8	79.4,
University of Georgia School of Medicine		(1938)	81.8
Northwestern University Medical School		(1929) (1932) 82.3, (1933) 84.2, (1937) 87.1, (1938) 87.5	84.6,
Rush Medical College		(1922) 84.3, (1932)	85.7
University of Illinois College of Medicine		(1934)	84.3
University of Louisville School of Medicine		(1938) 76.9,	80.3
Tulane University of Louisiana School of Medicine		(1932) (1937) 77.9	79.1,
University of Maryland School of Medicine		(1914)	82.8
University of Maryland School of Medicine and College of Physicians and Surgeons		(1938)	81.6
Harvard University Medical School		(1899)	81.9
Tufts College Medical School		(1929)	83.2
University of Michigan Medical School		(1923) 81.6, (1938) 77.8,	80.6
Washington University School of Medicine		(1929) 84.9, (1938)	79.6
Albany Medical College		(1920)	79.2
Columbia University College of Physicians and Surgeons		(1915) (1934) 83.1	84.9,
Eclectic Medical College, Cincinnati		(1935)	82.5
Ohio Medical University		(1894)	78.3
Ohio State University College of Medicine		(1937) (1938) 87.5	80.5,
Western Reserve University School of Medicine		(1919)	84.8
University of Oklahoma School of Medicine		(1937)	81.8
Jefferson Medical College of Philadelphia		(1908)	76.8
Temple University School of Medicine		(1933) 81.5, (1937)	81.4
University of Pennsylvania School of Medicine		(1912) (1933) 79.8, (1936) 82.6	75.
Medical College of the State of South Carolina		(1936)	79.3
Univ. of Tennessee College of Medicine		(1937) 77.9, (1938) 78.5,	79.9
Vanderbilt University School of Medicine		(1935)	82.3
University of Vermont College of Medicine		(1929)	79.9
Medical College of Virginia		(1938)	83.1
University of Virginia Department of Medicine		(1927)	77
University of Toronto Faculty of Medicine		(1926)	75.8

School	FAILED	Year Grad.	Per Cent
University of Arkansas School of Medicine		(1938)	73.8
College of Medical Evangelists		(1933)	70.2
Emory University School of Medicine		(1934)	73.2
Rush Medical College		(1920)	73.1
University of Illinois College of Medicine		(1923)	74.5
Physio-Medical College of Indiana		(1895)	47.2
University of Maryland School of Medicine and College of Physicians and Surgeons		(1916)	69.7
Columbia University College of Physicians and Surgeons		(1904) (1905) 65.7	71.8,
Ohio State University College of Medicine		(1917)	73
Medico-Chirurgical College of Philadelphia		(1914)	71.8
Temple University School of Medicine		(1913)	72.4
University of Pennsylvania School of Medicine		(1917)	63.7
University of Nashville Medical Department		(1908)	70.6
Baylor University College of Medicine		(1936)	73.8
Medical College of Virginia		(1924)	66.8
University of Virginia Department of Medicine		(1937)	73.8
University of Toronto Faculty of Medicine		(1931)	71.3

Book Notices

Diseases of the Chest and the Principles of Physical Diagnosis. By George W. Norris, A.B., M.D., and H. R. M. Landis, A.M., M.D., Sc.D. Diseases of the Bronchi, Lungs, Pleura, and Diaphragm. Revised by Simon S. Leopold, M.D., Assistant Professor of Medicine and Head of the Department of Physical Diagnosis in the University of Pennsylvania, Philadelphia. Transmission of Sounds Through the Chest. By Charles M. Montgomery, M.D. Electrocardiography and the Cardiac Arrhythmias, the X-Ray Study of the Heart and Great Vessels, and Additional Methods of Cardiac Examination. By Thomas M. McMillan, M.D., Physician to the Pennsylvania Hospital, Philadelphia. Sixth edition. Cloth. Price, $10. Pp. 1,019, with 478 illustrations. Philadelphia & London: W. B. Saunders Company, 1938.

This edition shows in every detail the march of progress in diseases of the chest over the last two decades. There is much in the first edition that is present today. It must be gratifying to the authors that what was the text of the diseases of the chest for clinicians, private physicians and students alike twenty years ago is still the text today. The edition as compared with the edition of 1917 is larger by more than 200 pages and is still divided into four sections: examination of the lungs, examination of the circulatory system, diseases of the bronchi, lungs, pleura and diaphragm, and diseases of the heart. The authors have been adept in separating the chaff from the wheat, in surveying the great amount of literature and research that has appeared in the world's medical periodicals each year. Through six editions in twenty-one years they have kept step with the times. We would like to refer the reader to the preface of the first edition in order that students may see what the authors hoped to do, what they most assuredly accomplished, as Millet's "Gleaners" in the field of fact that concerned them, the diagnosis of the diseases of the chest in the last two decades.

It was, indeed, unfortunate that Dr. Landis died during the early work of this edition. By his request, however, during a long illness, his task was taken over by an able clinician, Dr. Simon S. Leopold, who, as a tribute to the memory of Dr. Landis, took over the latter's role in the revision of the previous edition and rewrote the chapters dealing with bronchial asthma, bronchiectasis, lung abscess, cystic disease of the lung, and the relation of the nasal and accessory sinus disease to infections of the lower respiratory tract. The chapter on electrocardiography and the cardiac arrhythmias has been rewritten by Dr. Thomas McMillan, who has also added the chapter on the x-ray study of the heart and great vessels, a study profusely illustrated by diagrams.

With the recent progress of thoracic surgery, more refinement in the diagnosis of pathologic conditions of the chest has become necessary. This necessity has been fully realized by the added procedures of diagnosis, namely diagnostic pneumothorax, bronchoscopy, bronchography, thoracoscopy, roentgenograms, oblique and lateral views of lesions that may be hidden by the heart shadow, mediastinum, spine and domes of the diaphragm. The edition is completely illustrated with reduced prints of the roentgenograms, with postmortem roentgenograms of injected lungs, bronchographs, diagrammatic sketches, photographs, charts, tables, colored plates of disease conditions of the chest, photographs of pathologic cross sections, sagittal and cross sections of the torso, and electrocardiograms, thus catering to the visual memory of the students of diseases of the chest.

Cancer Diagnosis and Treatment: A Handbook for Physicians. Compiled and edited by the Committee on Cancer Education of the Colorado State Medical Society. Paper. Pp. 75. Denver: Colorado State Board of Health, 1938.

This is a handbook in brief and condensed form offered to the physicians of Colorado by the medical society and the board of health of that state as a part of the educational campaign against cancer, a campaign which includes education of the physician in the technical aspects of modern diagnosis and treatment and of the lay public in the recognition of suggestive signs of early cancer and precancerous conditions. The material contained in the handbook is authentic in character, conveniently arranged (except for the absence of an index, which would have improved even so small a handbook) and, while brief, is sufficiently comprehensive to serve the needs of the general practitioner, for whose use it is primarily intended. This booklet is significant not so much for what it contains, useful as that is, but for the fact that it is a joint educational effort by organized medicine and organized public health in Colorado. It is one of the self-imposed programs of self improvement which characterize the medical profession and which seem to have escaped the notice of many of its self-appointed critics. Attention is called in the introduction to the educational programs of the American Society for the Control of Cancer and its Women's Field Army, which functions in each state under the direction of the state medical society's committee on cancer. Not only as a technical contribution to cancer control in that state but as a manifestation of educational mobilization of all community forces against cancer, this booklet commands attention. Readers outside Colorado would have appreciated some statement in the pamphlet as to its availability outside the state and, if so, at what price and from what source.

Illustrated Primer on Fractures. Prepared by the Special Exhibit Committee on Fractures in Cooperation with the Committee on Scientific Exhibit of the American Medical Association. Fourth edition. Cloth. Price, $1. Pp. 95, with 43 illustrations. Chicago: American Medical Association, 1938.

In a new format, with an interleaving of blank pages for personal notes or drawings, there has now appeared a fourth edition of the popular Primer on Fractures. This is the product of the Special Exhibit Committee on Fractures of the American Medical Association under the chairmanship of Kellogg Speed, printed in cooperation with the Committee on Scientific Exhibit of the Association. The new volume fits any book shelf and can be carried in an automobile pocket for ready reference. In it are found descriptions of the elementary principles of fracture treatment, including emergency care for transportation, with brief explanations of cause, ordinary displacements and x-ray appearances of many of the fractures met in general practice, all illustrated by line drawings spread through the text. Plaster of paris bandage making and use are stressed and sage advice is given for its employment. A list of splints and materials which can be easily carried in the doctor's automobile or an ambulance is given. The committee for the American Medical Association should be congratulated on this revision for its conservative yet up-to-date instruction, its orderliness and its presentation in a form better adapted than the previous editions for carrying and handling. Every medical practitioner should be armed with this valuable vade mecum which conveys so much elementary yet essential information on which he may rely.

Corpus Iconum Morborum Cutaneorum. Collected and edited by Louis Nékám, Senator and Professor of Dermatology and Syphilology, Royal Hungarian University, Budapest. Volume V, Parts 1, 2 and 3. Cloth. Price, 194 marks. Pp. 180; 464; 928, with illustrations. Leipzig: Johann Ambrosius Barth, 1938.

At the ninth International Dermatologic Congress in Budapest, Sept. 13 to 21, 1935, it was decided to make a further issue of publications devoted to pictorial representations of dermatologic conditions. It was felt that such a publication would do much to produce a universal dermatologic nomenclature, to say nothing of its educational value. Professor Nékám agreed to assume this monumental task, although he had already devoted almost his entire time for two years to ensure the success of the congress. These three volumes are the fruits of these endeavors. He has been assisted in the publication by a staff of Hungarian, as well as by several German, Italian, English and French collaborators. It is unfortunate that the lack of space precludes mentioning them by name.

Part I, a book of 180 pages, is directed to the introduction. "In this work it is not the desire to present a textbook but rather a collection of examples of skin diseases with their classification and nomenclature." A morphologic as well as an etiologic classification is submitted to the reader. A valuable table of synonyms assists the reader to a clearer understanding of dermatologic terms. Instead of long descriptions of each illustration with the illustration, 115 pages are then devoted to only a few salient words about each illustration, for this monument comprises 4,566 photographs collected from between 500 and 600 dermatosyphilologists from all over the world. Part I finishes with an excellent index, an item in which the average European volume is lamentably weak.

Parts II and III are devoted to the pictorial illustrations and they are grouped so that the interested reader has an opportunity

to study many variations of the various diseases as collected from different parts of the world. In part II, of 464 pages, is found an immense collection of photographs on syphilis, the related frambesia or yaws, and tuberculosis. For the mycologist there is an enormous material furnished on mycotic diseases with illustrations of their growth, on mediums, and photomicrographs of individual types of organisms. Occupational eruptions and disorders of internal secretion are also well represented.

Part III, of 928 pages, is the zenith of the great work, if this is possible. Much material is furnished to illustrate types of parapsoriasis, a disease difficult for even the dermatologist to classify properly; lymphoblastomas and neoplasms are fully illustrated in all forms and types. There are many excellent representations of the rarer malignant diseases, Paget's disease, Bowen's disease and various nevoid conditions. Cutaneous fungous diseases of animals in their relation to man are also faithfully presented in this volume. Diseases of the appendages, hair and nails are presented. Part III also presents many cutaneous disorders in colors.

These three parts of volume V of the publications of the ninth International Dermatologic Congress, and in fact each one a volume in itself, are a monument to Professor Nékám, to the Hungarian school of dermatology and to Hungary itself. The cost of the preparation and production must have been enormous, to say nothing of the weeks and months devoted to it by what must have been loving hands, or it would never have been brought to fruition. Professor Nékám himself has furnished almost one fourth of the illustrations—the ones on fungi being notable.

These volumes are a credit to international dermatology, which knows no national boundries. The illustrations are almost invariably of a high order and are printed on a fine glossy paper that takes them well. There are enough of them on each disease to make the volumes of highly educational value not only for the specialist but also for the general medical man interested in dermatology. An atlas of cutaneous diseases of this monumental type has never been attempted before, and it will be many years before any one individual so fortunately situated as Professor Nékám and his school of dermatology will attempt to emulate it. The printer and illustrator have done their work well, the type is clear, the format is excellent, and the binding, while not elaborate, is designed to wear well.

The three volumes are unhesitatingly recommended to medical schools, libraries, dermatosyphilologists and medical men in general.

The Home Book of Medicine. By David Polowe, M.D. Cloth. Price, $2.75. Pp. 581, with 13 plates. New York: Greenberg, Publisher, Inc., 1938.

This book is an attempt at one of the most difficult feats in medical writing for the public, the production of a home book containing sound advice on what to do before the doctor comes, or what to do when there is no possibility that a doctor can be procured. In situations in which a doctor is readily available, such a book should limit itself to general questions of hygiene and healthy living, and perhaps emergency first aid. In that case it would be useless in remote places where medical aid is needed and there is no doctor within miles, or no way to communicate with a doctor in time. The old-time doctor book had detailed instructions for treating the sick without medical advice; the modern book of this type should eschew such suggestions. The volume under review gives the impression of a medical text somewhat written down to the supposedly lower intellectual level of the lay reader. Such writing misses the point. The lay reader is not less intelligent, by and large, than the medical reader. He is simply less well equipped with a background for the comprehension of medical literature. Merely setting before such a reader a somewhat simplified medical book does nothing for him except through its recital of symptoms to tempt him to self diagnosis and through the detailed outline of treatment to suggest that he and not his doctor should be responsible for therapy. To be specific, the chapters on immunity contain much material, such as that on agglutinins and opsonins, of no interest or importance to the lay reader and leave him confused rather than enlightened. The discussion of débridement under tetanus is out of place in a book for the layman. The anatomic chapters in the front of the book are inadequate but at the same time contain much material of no interest to the nonmedical reader. The illustrations are obviously transplanted from medical textbooks. What does the lay reader know or care about the pons varolii, that there are sixty-two bones in the lower extremity, and the exact relationship of the sutures in the skull? The section on the "insanities" is sketchy, inaccurate and totally inadequate. The implication that cancer is a term applicable to all tumors, benign as well as malignant, is unjustifiable and will go far to undo the efforts of medical societies and women's clubs to dispel the unthinking fear of cancer and to cause people to deal boldly with precancerous states. Such subjects as fibroneuromas, ganglionic cysts, "surgical conditions of the bones" and surgery of the nerves and blood vessels are unsuitable for discussion in such a book; the adequacy of the material itself can be imagined from the fact that the chapter on surgical conditions in adults takes just nine pages. These are but a few points among many. The book contains much good advice and many useful facts. This is readily apparent to the physician, but the book is not intended for the physician. Considering the book as a whole, one is forced to the conclusion that it will do little good in the ordinary home and may do much harm.

The British Encyclopaedia of Medical Practice Including Medicine, Surgery, Obstetrics, Gynaecology and Other Special Subjects. Under the General Editorship of Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D. Volume VIII: Leukaemia to Mucous Colic. Cloth. Price, $12. Pp. 712, with 65 illustrations, including 13 plates. London & Toronto: Butterworth & Co. (Publishers), Ltd., 1938.

Volume VIII of the Encyclopaedia of Medical Practice proceeds from "leukaemia" to "mucous colic." It is interesting that these two terms should differ so greatly from the American spelling and usage of the same terms. En route from "leukemia" to "mucous colic" are such interesting main headings as the "lipoidoses," "liver diseases," "lung diseases," "the lymphatic glands," "malingering," "massage," "meningitis," "mental diseases," "metabolism," "mouth diseases" and "motor neuron diseases." The cooperating writers are among the leaders of British medicine and the writing throughout shows the effects of fine editorial attention. Volume VIII is fully up to the standard of the excellent volumes which have preceded it.

Säuglingskrankheiten. Von Professor Dr. H. Finkelstein. Fourth edition. Cloth. Pp. 890, with 204 illustrations. Amsterdam: Elsevier, 1938.

This edition retains in general form the outline of the previous editions. The various chapters and subjects have, in the main, been revised, rewritten and brought down to date. A chapter on rickets has been added and the older chapters on vitamin deficiencies have been extensively revised. Some new tables have been appended and several color plates on rickets and the skin diseases have been added. The author has incorporated his latest researches on water balance in the chapter on nutritional disturbances and he has included in an outstanding chapter on eczema much of his experimental work on this subject. The literature is brought through the end of 1937. With the advent of the third edition, in 1924, it seemed that the author's book had reached the acme of perfection. Nevertheless in the present edition he has improved on previous editions of his masterful writings. Heinrich Finkelstein's work contains a storehouse of knowledge, replete with the author's large and unique experience. The larger type used in the fourth edition, as well as a better quality of paper, greatly improve the physical format.

The Conquest of Cholera: America's Greatest Scourge. By J. S. Chambers, M.D., Professor of Hygiene and Public Health and Director of Student Health Service, University of Kentucky. Cloth. Price, $4.75. Pp. 366, with 40 illustrations. New York: Macmillan Company, 1938.

A most fascinating story that is as interesting as it is authoritative. There will be few readers who can lay this book aside until they have read the last page. The book deals with the epidemic of Asiatic cholera in the United States from its outbreak in 1832 to its conquest in 1892. The reader is taken by word, picture and map along the path of the disease from its first outbreak along the Atlantic coast to the interior valley and the epidemic in the blue grass country. The second invasion and the gold rush of '49 furnish further thrilling chapters. The contributions of foreign and American physicians and allied workers are discussed and each is given the place and prominence deserved. This volume is a notable contribution to medical history.

The Clinical Examination of the Nervous System. By G. H. Monrad-Krohn, M.D., F.R.C.P., Professor of Medicine in the Royal Frederick University, Oslo. Seventh edition. Cloth. Price, $3. Pp. 319, with 111 illustrations. New York: Paul B. Hoeber, Inc., 1938.

In the review of the fifth edition of this book it was stated that the book could not be praised too highly, that it contains everything essential and states it in a clear manner, and that nonessentials are omitted. With seven editions in seventeen years its popularity is amply proved. The number of illustrations, mostly inserts and well chosen, is greater than in previous editions. So much also has been added to the text that the maximum desirable size for a book of this kind has been reached. When a new edition becomes necessary the author should condense the material and decrease rather than increase the size of the book. It is extremely helpful for students, general practitioners and neurologists alike.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Liability of a Corporation for Malpractice.—The New Castle Clinic was a corporation the directors of which were licensed physicians. It was described as "an operating force for a hospital" located in a building owned by the Clinic Realty Company. It employed the help in the building and collected all fees and charges for services rendered by the physicians who had offices in the building. The appellee injured his leg in an automobile accident and was taken to the clinic building. There the appellant physician, a director of the corporation, diagnosed the injury as a dislocation of the hip, which was reduced. The patient was then placed on a cot and returned in an ambulance to his home. Subsequently, it was alleged, other physicians discovered that there had been a fracture of the pelvis and hip socket. Permanent lameness and partial disability resulted. The patient then sued the clinic corporation and the appellant physician. The trial court gave judgment for the patient, and the case came before the Supreme Court of Indiana for review.

The complaint was based on the theory that the corporation was engaged in the practice of medicine and surgery and that it contracted to diagnose and treat the patient's injury. But, said the court, in Indiana it is unlawful for a corporation to practice medicine. Any contract, therefore, made in the name of a corporation, purporting to bind it to diagnose or treat ailments or diseases, is not only ultra vires but unlawful and against public policy. The right to practice medicine and surgery under a license by the state is a personal privilege. It cannot be delegated, and a corporation or other unlicensed person may not engage in the practice of medicine by employing one who is licensed to do the things which constitute the practice of medicine.

If a licensed physician employs assistants who work under his direction as assistants in the practice of medicine or surgery, the rule of respondeat superior applies and there are cases, the court said, holding that a corporation which has contracted to diagnose or treat disease is estopped from denying that a physician is its agent. It is undoubtedly true that corporations are liable under their ultra vires executed or partially executed contracts, and for the negligence of their agents and servants thereunder, where the contracts are within the apparent scope of their authority or where the other party to the contract could not be presumed to be cognizant of the invalidity. Difficulty arises, however, in applying the estoppel doctrine, without doing violence to sound principle, where the contracts involved are not only ultra vires but unlawful as against public policy. The complaint in the present case charged that the corporation contracted to diagnose and treat the plaintiff's ailments; that it was negligent in performing the contract. The defense is that the corporation made no such contract because it had no power to make it. An estoppel would deny the corporation the right to assert illegality, notwithstanding there were no facts involved concerning which the patient was deceived or was without knowledge. There can be no estoppel, in the opinion of the court, on such a basis. Since the corporation could not legally practice medicine, the patient was bound to know that whoever treated him was not acting for the corporation.

The patient came to the hospital, talked to the appellant physician and was treated by him with the assistance of two other physicians. Nothing was said as to whether the services were to be rendered by the physician or by the corporation. The physician was a stockholder and director in the corporation. The facts justify the conclusion that the corporation charged and collected for the use of its hospital facilities and equipment, and for furnishing the services of licensed and qualified physicians and surgeons. Under such a contract the duty of the corporation, in respect to the physicians or surgeons, would be complied with by using reasonable and ordinary care to employ reasonably qualified, reputable, licensed physicians. In such a case the physicians or surgeons are independent contractors. There was evidence from which the jury was justified in believing that, at the time the patient was treated by the appellant physician, there was a fracture of the hip joint and of the pelvis, and that these fractures would have been disclosed by a reasonably careful examination of a roentgenogram, taken with ordinary care, or by a reasonably careful fluoroscopic examination. The roentgenogram taken by the appellant physician at the time of the treatment was destroyed because, he testified, he had spoiled it and it was no good. The appellant physician examined a roentgenogram taken by physicians who subsequently treated the appellee and admitted that it showed a fracture of the pelvis and that a roentgenogram taken an hour after the accident should have shown the same thing if the fracture were then present. The jury may have concluded, the court said, that the fracture was there and that the roentgenogram taken by the appellant physician would have disclosed it if taken and developed and examined with that degree of care which might reasonably have been expected from a reasonably careful physician under the standards prevailing at the time in the community. In the opinion of the court, the evidence was sufficient to justify the verdict against the appellant physician.

The judgment of the trial court against the physician was affirmed and the judgment against the corporation, for the reasons stated, was reversed.—*Iterman et al. v. Baker (Ind.), 15 N. E. (2d) 365.*

Autopsies: Liability for Autopsy Performed at Request of Coroner.—The plaintiff sued to recover damages for an unauthorized autopsy performed on his minor son. The county coroner, three physicians who performed the autopsy and an incorporated funeral home in which the autopsy was performed were joined as parties defendant. At the close of the plaintiff's evidence, judgment of nonsuit as to all defendants was entered, and the plaintiff appealed to the Supreme Court of North Carolina.

The body of the plaintiff's minor son was discovered in a swimming pool in Greensboro, apparently drowned. The plaintiff lived in Wilmington. None of the next of kin of the deceased boy was in the county in which his body was found. The coroner was called in, and he, on finding no water in the lungs and the neck unbroken, had the body removed to the defendant funeral home and called in the three defendant physicians to determine the cause of death. The evidence showed that the autopsy was carefully performed and that there was no multilation of the body other than an incision 16 inches (41 cm.) long, carefully closed and sewn, which did not show when the body was clothed for burial. The marks on the body, according to the evidence, were but little more than those which would have been rendered necessary in the ordinary process of embalming. The autopsy revealed that the death was due to an acute heart attack. It was testified that the coroner had said "he had the autopsy performed to determine the cause of death, that he had no suspicion of foul play, that no inquest was held." Admittedly no permission from the plaintiff nor any of the deceased's kin was asked or obtained. The plaintiff testified that he would not have given his consent if it had been requested and that the knowledge of the autopsy on the body of his son shocked and unnerved him equally with the news of his death.

The duties and powers of a coroner, the court said, are prescribed by law. No authority is given the coroner, in cases in which he does not suspect foul play and in which no inquest is held or jury summoned, to cause on his own initiative an

autopsy to be performed merely to ascertain the cause of death of a person. The statute authorizes an investigation "whenever it appears that the deceased probably came to his death by the criminal act or default of some person," and in such case empowers the coroner "to summon a physician or surgeon and to cause him to make such examination as may be necessary whenever it appears to such coroner as proper to have such examination made." Furthermore, the court continued, the right to perform an autopsy in North Carolina is expressly limited by chapter 209, Acts of 1933, as follows:

> The right to perform an autopsy upon the dead body of a human being shall be limited to cases specially provided by statute or by direction or will of the deceased; cases where a coroner or the majority of a coroner's jury deem it necessary upon an inquest to have such an autopsy; and cases where the husband or wife or one of the next of kin or nearest known relative or other person charged by law with the duty of burial, in the order named and as known, shall authorize such examination or autopsy.

It follows, said the court, that an unauthorized autopsy to determine the cause of death when foul play is not suspected, though ordered by the coroner under color of his office, is in violation of the rights of the next of kin of the deceased and that the coroner is not protected by the official capacity in which he purports to act. The duty to ascertain the limits of his authority and to observe the law, particularly when the rights of others were affected, was incumbent on the coroner. The general rule is that when an officer goes outside the scope of his duty he is not entitled to protection on account of his office but is liable for his acts like any private individual.

It also follows, the court said, that the physicians who performed the autopsy at the request of the coroner, on his request that this be done merely to determine the cause of death and without the consent of the next of kin, are equally unprotected from liability for an unauthorized invasion of the rights of those injuriously affected.

There was no testimony that the agents of the defendant funeral home did more than fail to offer objection to the action of the coroner by whom the body was brought to its home, and the court could not perceive how this evidence could be held sufficient to impose liability for an unauthorized autopsy performed by others and with which it had nothing to do.

The court concluded, therefore, that the judgment of nonsuit as to the defendant funeral home should be affirmed and reversed as to the other defendants.—*Gurganious v. Simpson et al. (N. C.), 197 S. E. 163.*

Workmen's Compensation Act: Extent of Loss of Vision; Use of Glasses.—The workman injured his right eye during the course of employment, resulting in a 20/100 vision in that eye. With the aid of glasses the vision was normal. Liability was admitted by the employer and compensation was paid for several months. Then the employer's insurer served notice of discontinuance of payments and the workman instituted proceedings under the workmen's compensation act. The industrial commission affirmed an award of a referee based on a 75 per cent permanent partial disability of the right eye and the employer petitioned the Supreme Court of Minnesota for a writ of certiorari.

The question before the court was whether, in computing an award for a fractional loss of vision, such award should be based on the percentage of loss without the use of glasses or whether it should be based on the percentage of loss when such vision is aided by means of a corrective lens. Vision, the court pointed out, is measured by scientific methods. A test recognized by the medical profession for measuring visual acuity is known as the Snellen test and this test is used by the industrial commission as a standard in rating losses of vision. The court could find nothing in the workmen's compensation act to indicate the intention on the part of the legislature that disability after correction is to be the basis for awarding compensation where there has been an eye injury. If such had been the intention, the act would have been drafted so to provide. The court could see no more logic in holding that the legislature intended to base disability in any eye case after correction than in holding that in a leg or arm case compensation should be awarded on the extent of disability after the attachment of a brace or any other appliance. The fact that glasses are required to restore vision was to the court evidence of the permanency of the injury, and, whether artificial means may partially or even wholly restore sight, it nevertheless cannot obliterate the effect of the accident causing the injury.

The court was not prepared to say that other tests may not be devised that will replace and improve the so-called Snellen test and afford the medical profession and the industrial commission a more nearly perfect way of rating visual acuity. Until such a method presents itself, however, and is recognized by the medical profession as being as good or better, the commission, in the opinion of the court, was justified in using the Snellen test.

The decision of the industrial commission for the workman was therefore affirmed.—*Livingston v. St. Paul Hydraulic Hoist Co. (Minn.), 279 N. W. 829.*

Hospitals: Detention of Patients for Nonpayment of Bills.—The plaintiff sued the defendant hospital and its manager to recover damages for unlawfully detaining her in the hospital. At the close of the evidence the action against the hospital was dismissed but judgment was rendered against the manager. The plaintiff thereupon appealed to the Supreme Court of North Carolina.

The plaintiff testified that she entered the hospital for treatment December 7 and planned to go home December 14; that the manager, on being told that she did not have the money to pay her bill, informed her that she could not leave the hospital until the doctor's bill and the hospital bill were paid in full. She believed, she testified, what the manager of the hospital told her, and her departure from the hospital was thereby delayed for several days. No one undertook to restrain her, however, by any kind of force.

False imprisonment, said the Supreme Court, is the illegal restraint of one's person against one's will. It generally includes an assault and battery and always, at least, a technical assault. Involuntary restraint and its unlawfulness are the two essential elements of the offense. When no force or violence is actually used, the submission must be to a reasonably apprehended force. The circumstance merely that one considers himself restrained in person is not sufficient to constitute a false imprisonment unless there is in fact a reasonable ground to apprehend a resort to force on an attempt to assert one's liberty. To constitute false imprisonment there must be an exercise of force, or expressed or implied threat of force, by which in fact the person is deprived of his liberty and compelled to remain where he does not wish to remain. The restraint of the person may be caused by threats, as well as by actual force, if the words are such as to induce a reasonable apprehension of force.

Applying these principles of law to the plaintiff's testimony, the court said, it was apparent that neither force nor threat of force was employed to prevent her from leaving the hospital, and though she testified that she thought she could not leave the hospital until the bill was paid nevertheless, without paying the bill, she departed from the hospital without restraint by word or act. For these reasons, the court concluded that the judgment of nonsuit as to the hospital was properly entered. That judgment was therefore affirmed.—*Hoffman v. Clinic Hospital, Inc. (N. C.), 197 S. E. 161.*

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Boston, Apr. 6-8. Dr. E. R. Clark, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Pathologists and Bacteriologists, Richmond, Va., Apr. 6-7. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American College of Physicians, New Orleans, March 27-31. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

American Orthopsychiatric Association, New York, Feb. 23-25. Dr. Norvelle C. La Mar, 149 East 73d St., New York, Secretary.

American Society of Anesthetists, New York, Apr. 14. Dr. Paul M. Wood, 131 Riverside Drive, New York, Secretary.

Arizona State Medical Association, Phoenix, Apr. 13-15. Dr. D. F. Harbridge, 15 East Monroe St., Phoenix, Secretary.

Missouri State Medical Association, Excelsior Springs, Apr. 10-12. Dr. E. J. Goodwin, 634 North Grand Blvd., St. Louis, Secretary.

Pacific Coast Surgical Association, San Francisco, Oakland, Del Monte, March 28-31. Dr. H. Glenn Bell, University of California Hospital, San Francisco, Secretary.

Southeastern Surgical Congress, Atlanta, Ga., Mar. 6-8. Dr. B. T. Beasley, 701 Hurt Bldg., Atlanta, Ga., Secretary.

Tennessee State Medical Association, Jackson, Apr. 11-13. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

16: 643-782 (Dec.) 1938

Paroxysmal and Persistent Hypertension in Association with Lesions of the Adrenal Glands. F. R. Nuzum and J. W. Dalton, Santa Barbara, Calif.—p. 643.
Studies on Coronary Circulation: VI. Effect of Some Members of the Digitalis Group on Coronary Circulation. A. M. Ginsberg, Kansas City, Mo.; O. O. Stoland and K. A. Siler, Lawrence, Kan. —p. 663.
The Measurement of Venous Pressure by the Direct Method. R. H. Lyons, J. A. Kennedy and C. S. Burwell, Boston.—p. 675.
*Unusual Forms of Rhythms Involving the Auriculoventricular Node. L. N. Katz and L. G. Kaplan, Chicago.—p. 694.
*Coronary Occlusion, Heart Failure and Environmental Temperatures. W. B. Bean and C. A. Mills, Cincinnati.—p. 701.
Bacterial Endocarditis Superimposed on Syphilitic Aortitis and Valvulitis: Clinicopathologic Study with Five Case Reports. Helen E. Martin and W. L. Adams Jr., Los Angeles.—p. 714.
Complete Transposition of the Great Vessels: Clinical and Pathologic Features. Helen B. Taussig, Baltimore.—p. 728.
Some Notes on the Anatomy of the Elephant's Heart. R. L. King, Seattle; C. S. Burwell and P. D. White, Boston.—p. 734.
The Electrocardiogram of the Elephant. P. D. White, J. L. Jenks Jr. and F. G. Benedict, Boston.—p. 744.

Unusual Forms of Atrioventricular Rhythms.—In the last two years Katz and Kaplan have encountered four cases of unusual atrioventricular rhythm. In a case in which there were carotid sinus hyperirritability and reflex stimulation, the differentiation of reciprocal rhythm and the closely resembling condition of sinus bradycardia, nodal escape and interference dissociation with pseudoreciprocal rhythm could be demonstrated. The electrocardiograms of two patients showed variations in the PR (RP) interval, but the RR interval remained constant. The electrocardiogram of another patient showed a short PR interval and a prolonged QRS complex, with a shift in the pacemaker to the sino-auricular node following an ectopic ventricular beat, from a patient with severe chronic cardiac disease.

Environmental Temperatures and Heart Disease.—Bean and Mills studied the influence of temperature on coronary thrombosis and cardiac failure by a review of the literature giving the months in which the acute attacks occurred and by a survey of the records of all patients with noninfectious cardiac failure who were admitted to the Cincinnati General Hospital from Jan. 1, 1920, through Dec. 31, 1937. The time of onset of the acute attacks in these records was mentioned in 278 instances of 8,673 consecutive necropsies. The data obtained show a marked seasonal swing in the frequency of attacks of coronary occlusion. They are almost twice as frequent in winter as in summer. An even greater winter peak is found in the frequency of onsets of noninfectious arteriosclerotic cardiac failure, which occurred about two and a half times more frequently in winter than in summer. Just why syphilitic cardiac failures pursue a course independent of temperature level is not entirely clear. It is probably because syphilitic cardiac disease progresses at a more steady and rapid rate, and therefore the effects of changing temperature produce a less noticeable effect. Greater frequency of infections, especially of the respiratory tract, and heightened general body metabolism probably act together to increase the winter hazards of existence for cardiac patients, while the calm warmth of summer brings a period of relative safety. In stormy weather, fluctuations in temperature may produce a strain by means of little known vasomotor reflexes; as in angina pectoris while walking in windy or cold weather. Migration out of northern cold and storms, either temporarily or permanently, is strongly indicated for every patient of limited cardiac reserve.

American Journal of Public Health, New York

28: 1369-1456 (Dec.) 1938

A Century in Arrears. A. Wolman, Baltimore.—p. 1369.
The Health of the Nation. T. Parran, Washington, D. C.—p. 1376.
Present Status of Dental Caries in Relation to Nutrition. Nina Simmonds, San Francisco.—p. 1381.
Development of Industrial Hygiene in the United States. J. J. Bloomfield, Washington, D. C.—p. 1388.
Value of the Vital Statistics Data on Birth and Death Certificates in County Health Work. E. G. Brown, Mineola, N. Y.—p. 1398.
*Outbreak of Encephalitis in Man Due to the Eastern Virus of Equine Encephalomyelitis. R. F. Feemster, Boston.—p. 1403.
Rocky Mountain Spotted Fever and Tick Survey in Iowa. C. F. Jordan, Des Moines, Iowa.—p. 1411.
*The Probable Typhoid Carrier Incidence in Mississippi. A. L. Gray, Jackson, Miss.—p. 1415.

Equine Encephalomyelitis in Man.—Feemster gives a chronologic review of the 1938 outbreak in Massachusetts of encephalitis in horse and man due to the eastern virus of equine encephalomyelitis. He states that it is impossible at present to estimate how many human cases of encephalitis due to the equine virus have occurred in the state during the outbreak. Some thirty-eight cases have been under investigation. Thus far the virus has been isolated in eight cases at postmortem examination. If the mosquito is the vector of the natural infection in horses, the spread of the disease in the state can easily be accounted for once a case is introduced. Some of the cases under investigation will have to be eliminated either because another diagnosis will be established or because evidence will not be sufficient to warrant the diagnosis of encephalitis due to the equine virus. As early as 1931 Meyer suggested the possibility of human beings contracting the equine disease. The disease in the severer form is sufficiently different from the usual varieties of encephalitis to be recognized clinically. If some of the milder cases under investigation prove to be due to the same virus, and particularly if the existence of subclinical infections can be established, the recognition of all cases will be difficult unless laboratory means of verifying the diagnosis can be found. The onset in infants was sudden, accompanied by fever, irritability or drowsiness, cyanosis and convulsions. In older children and in the one adult the symptoms were of slower onset, from four to ten days. Headache, frontal in character, and dizziness were the first complaints in the older patients. All patients were semicomatose to comatose on admission and the majority showed continued tremors or muscular twitchings. Rigidity of the neck was a constant feature, as was a tense anterior fontanel in the infants. The suppression of the cutaneous reflexes was constant in the comatose patients, while the Kernig and kindred signs varied markedly. The pupils reacted sluggishly to light. The temperature was invariably high, from 102 to 104 F., and in the fatal cases (twenty-five of the thirty-eight) continued to rise. When recovery took place the fever fell by lysis, becoming normal in four or five days. The spinal fluid showed increased pressure. When the patient lived for more than two or three days there was a drop in both the spinal fluid and leukocyte counts, with a change to the mononuclear type of cell. Convulsions and muscular twitchings marked the course of the disease. In the infants a peculiar edema developed about the eyes and in the upper extremities. Cyanosis was marked in all cases. Deep coma from which the majority of patients never aroused developed shortly after admission. Some cases suspected of being due to the virus have ended in complete recovery, but it appears that others will show paralyses, mental changes and other permanent residuals. A number of problems with regard to the disease await elucidation. It is necessary to know whether other reservoirs besides the horse are important. It yet remains to be demonstrated satisfactorily that the mosquito transmits the natural infection among horses. The importance of other insects, especially the recently incriminated tick, as vectors of the disease awaits investigation. The need of having all cases of encephalitis reported to health departments is emphasized by the presence of the equine infections in human beings. The attack rate among horses was low (3.5 per cent) but the case fatality was high (more than 90 per cent).

Typhoid Carrier Incidence in Mississippi.—Gray presents the results of a random typhoid carrier survey. It involved 18,577 people in sixteen counties in Mississippi, 1,547 of whom gave a history of having had typhoid as diagnosed by physicians. Those surveyed were classified by age and race as to the total

number in each group giving a history of typhoid. The percentages thus obtained were applied to the total age and race group populations of the state to find the total number of people now living in Mississippi with a history of typhoid. According to these calculations there are 183,230 people in the state with such a history. Of 244 persons with proved typhoid in Mississippi eight, or 3.27 per cent of the group, became permanent carriers and were excreting Bacillus typhosus more than one year after onset. Applying this percentage to the total of recovered persons living in the state, 183,230, there are about 5,991 typhoid carriers in the state at present, or 288 carriers per hundred thousand of population.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

40: 805-958 (Dec.) 1938

The Development of the Forms of Treatment in Carcinoma of Uterine Cervix During the Last One Hundred Years: Janeway Memorial Lecture. H. Schmitz, Chicago.—p. 805.
Observations on Changes Occurring at Benign Giant Cell Tumor Sites Several Years Following Treatment by Conservative Measures. A. Brunschwig, Chicago.—p. 817.
Aneurysms of Aortic Sinuses or Sinus of Valsalva. H. W. Ostrum, B. D. Robinson, C. F. Nichols and B. P. Widmann, Philadelphia.—p. 828.
Roentgenologic Anatomic Study of the Left Auricle Following Postmortem Opacification. R. Heim de Balsac and D. Routier, Paris, France.—p. 838.
*Roentgenologic Classification and Diagnosis of Silicosis. P. B. Matz, Washington, D. C.—p. 848.
*Bilateral Pleural Collections of Fluid. J. S. Packard, Allenwood, Pa., and B. Gordon, Philadelphia.—p. 859.
Roentgenologic Manifestations of Emphysema, with Special Reference to Lipiodol Injection. J. O'Donoghue, St. Louis.—p. 863.
Fractures of the Atlas Resulting from Automobile Accidents: Survey of the Literature and Report of Six Cases. H. F. Plaut, Cincinnati.—p. 867.
Cancer of the Ovary and Its Treatment. C. F. Burnam, Baltimore.—p. 891.
Late Bladder Complications Following Application of Radium to the Uterus or Uterine Cervix: Report of Three Cases. A. McNally, Chicago.—p. 895.
Interstitial Use of Low Radium Content Monel Metal Needles in Treatment of Angiomas. H. G. F. Edwards, Shreveport, La.—p. 899.
Iowa Experiment in Cancer Control. A. W. Erskine, Cedar Rapids, Iowa.—p. 903.
Biologic Measurement of Radiation Quantities. P. S. Henshaw and D. S. Francis, New York.—p. 906.
Studies on Roentgen Cinematography of the Internal Organs and Circulation of the Blood of the Human Body. K. Kawaishi, Nagoya, Japan.—p. 913.

Roentgen Classification and Diagnosis of Silicosis.—Matz classified, according to the criteria of Sampson, 167 veterans hospitalized for various types of silicosis. The classification is based on the x-ray observations. As the x-ray study of these cases progressed, it was observed that there was a paucity of information regarding the occupational history of the individual patients. In many instances short references were made to a single occupation of the silicotic veterans without indicating the other occupations in which they might have been engaged, the hours of employment, the concentration of the dust particles, and other points necessary to establish a diagnosis of silicosis. The inference drawn from a careful study of the roentgenograms of these patients is that the essential requirement in making a diagnosis of silicosis is the correlation of the clinical history, physical changes, a detailed occupational history and the x-ray observations. It is unsafe to depend on any of these data singly; they must be correlated and a decision reached only after a careful study is made of all the data available in each case. The inhalation of silica dust produces certain x-ray changes characterized by an accentuation of the linear markings of the lungs. Such changes are not specific for silicosis, since they are also found in subjects who give a history of inhaling nonsilicious dusts. Inflammatory processes, infections of various kinds and abnormal circulatory states may also produce x-ray densities which simulate the preliminary x-ray changes, accentuated linear markings, found in the early stages of silicosis. It is only when fibrotic nodulations are found in the parenchyma and are present on the roentgenograms and there is a history of employment in a silicious occupation, together with evidence of clinical and physical signs of silicosis, that one is justified in arriving at a diagnosis of this disease. The roentgenologic classification of silicotic disease in the group of veterans according to the terminology of Sampson showed that 29.9 per cent were classified as first, second or third degree silicosis, 11.4 per cent as silicosis with nontuberculous infection, 42.5 per cent as silicosis with tuberculosis and 15.6 per cent as silicotuberculosis. One case was diagnosed as asbestosis. The most common x-ray observations in silicosis with infection in the order of frequency were mottling, widening of the mediastinum, diffuse haze or shadow extending inward from the lateral pleura of the midportion of the lungs, prominence of the linear markings, beading along the course of the linear markings, emphysema, discrete nodule formation and a combination of discrete and confluent nodular formation. Those in silicosis with tuberculosis were fuzziness and haziness of the outline of the silicotic nodules, fibrosis, caseation, mottling, emphysema, pleurisy and cavitation. In silicotuberculosis the most frequent x-ray observations were fuzziness and haziness of the outline of the silicotic nodules, fibrosis, mottling, caseation, emphysema, pleurisy and cavitation. Silicosis is difficult to diagnose when emphysema is a coexisting condition. Owing to its presence, certain of the diagnostic signs of silicosis may become obscured.

Bilateral Pleural Collections of Fluid.—The simultaneous occurrence of a transudate on one side and exudate on the other is rare. Packard and Gordon encountered three such cases in a series of 228 patients with pleural effusions admitted to the Chest Department of the Jefferson Hospital during the last fourteen years. They had been receiving artificial pneumothorax treatments for unilateral tuberculosis, the effusions having developed as a complication on the treated side; the transudates occurred subsequently in the opposite pleural cavity, two without apparent cause. The possible mechanism in one case is discussed. While the etiology of this case is undoubtedly a factor in creating the background for the transudate in the right pleural cavity, the mechanism was essentially physiologic. It appears that pulling and rotating of the mediastinum were caused by the artificially induced high negative intrapleural pressure on the left side. As a result blood and fluid were sucked from the fine capillaries, areas of new growth beneath the pleura and other tissues into the right pleural cavity. Undoubtedly the pumping action of the paradoxically moving diaphragm as a secondary mechanism was largely responsible for aggravating the mediastinal condition. Thus, it would seem that the greatest care should be taken in expanding forcefully any lung that has been contracted for a long time because of the possible influence on the opposite pleural cavity. In the management of bilateral collections of fluid the principles of hydrodynamics and aerodynamics are important. The combination of pneumothorax and thoracentesis seems desirable.

American Journal of Tropical Medicine, Baltimore

18: 625-734 (Nov.) 1938

Atabrine Prophylaxis in Malaria: Report of Third Year's Investigation. M. E. Winchester, Brunswick, Ga.—p. 625.
Relapsing Fever in California: Attempts to Transmit Spirochetes of California Relapsing Fever to Human Subjects by Means of Bite of Vector, Ornithodoros Hermsi Wheeler. C. M. Wheeler, San Francisco.—p. 641.
Studies on Transmission of Relapsing Fever in North China: II. Observations on Mechanism of Transmission of Relapsing Fever in Man. H. L. Chung and Y. L. Wei, Peiping, China.—p. 661.
Bejel: Syphilis as Contagious Disease of Children. E. H. Hudson, Clifton Springs, N. Y.—p. 675.
Comparison of Strains of Actinomyces Recovered from Human Lesions. J. F. Kessel and E. B. Goolden, Los Angeles.—p. 689.
Specific Autogenous Vaccine Treatment of Otomycosis: Preparation of Vaccine. G. M. Mood, Charleston, S. C.—p. 703.
*Cure of Plasmodium Knowlesi Malaria in Rhesus Monkeys with Sulfanilamide and Their Susceptibility to Reinfection. L. T. Coggeshall, New York.—p. 715.
Clinical Reaction in Vivax Malaria as Influenced by Consecutive Employment of Infectious Mosquitoes. M. F. Boyd and S. F. Kitchen, Tallahassee, Fla.—p. 723.
Instance of Protracted Latent Incubation Period in a Patient Infected with a North American Strain of Plasmodium Vivax. M. F. Boyd and S. F. Kitchen, Tallahassee, Fla.—p. 729.

Malaria Cured with Sulfanilamide.—Coggeshall effected a cure with sulfanilamide for Plasmodium knowlesi malaria in rhesus monkeys. The absence of demonstrable parasites in the blood smears after treatment with sulfanilamide, the inability to transfer infection by the subinoculation of blood or spleen to susceptible animals and the failure of the splenectomized monkeys to relapse is evidence that the infection was eliminated. As a final test for the eradication of infection, all monkeys were reinoculated intraperitoneally with one million parasites. The

length of time after treatment varied from twenty-nine to ninety-one days. Each inoculation resulted in an infection followed by recovery from the acute attack in the nonsplenectomized monkeys. The three which had been splenectomized had severe and rapidly fatal infections. All the monkeys became infected when reinoculated. Only the three monkeys which were splenectomized died as the result of their infections. The fact that the remaining seven monkeys had mild infections followed by spontaneous recovery was indicative of a partial residual immunity in the absence of a latent infection.

Archives of Neurology and Psychiatry, Chicago

41: 1-222 (Jan.) 1939

Somnolence Caused by Hypothalamic Lesions in the Monkey. S. W. Ranson, Chicago.—p. 1.
Genesis of Microglia in the Human Brain. J. Kershman, Montreal.—p. 24.
The Hemato-Encephalic Barrier. L. S. King, Princeton, N. J.—p. 51.
*Epileptogenic Cortical Scars: Results of Surgical Removal. W. J. German, New Haven, Conn.—p. 73.
*Studies in Mongolism: I. Growth and Physical Development. C. E. Benda, Wrentham, Mass.—p. 83.
Cerebral Arteriosclerosis: Signs and Symptoms from Compression and Erosion of Parenchymatous Tissue. N. W. Winkelman, Philadelphia.—p. 98.
Cerebral Circulation: I. Reaction of Pial Arteries to Epinephrine by Direct Application and by Intravenous Injection. M. Fog, Copenhagen, Denmark.—p. 109.
Congenital Morphologic Abnormalities of the Brain in a Case of Abortive Tuberous Sclerosis: Functional Implications and Bearing on Pathogenesis of So-Called Genuine Epilepsy. P. I. Yakovlev, Waltham, Mass.—p. 119.
Meningiomas of the Brain. G. Horrax, Boston.—p. 140.
Treatment of Encapsulated Abscess of the Brain: Visualization by Colloidal Thorium Dioxide. E. A. Kahn, Ann Arbor, Mich.—p. 158.
Chronic Perivascular Demyelination (Homophasic Cerebrospinal Demyelinating Periangiosis). G. Steiner, Detroit.—p. 166.

Epileptogenic Cortical Scars.—The surgical treatment of traumatic epilepsy is at present directed toward removal of the irritative focus. This, German points out, requires accurate preoperative localization of the lesion. His report is based on the results in twenty-nine cases after intervals of from one to eight and a half years following cerebral surgical procedures for the treatment of epilepsy. In nineteen of the twenty-nine cases there was complete or partial relief from convulsive symptoms. Frequent major attacks continued in nine cases. The standard operative procedure of complete excision was followed in fourteen of the sixteen cases in which there were cortical scars. The results were satisfactory for eleven patients, four being completely relieved from convulsions and six definitely improved. Frequent major attacks continued in three and one patient died. Of the two remaining cases, lysis of meningeal adhesions was successful in one and failed in the other. Of the four cases of porencephaly, simple uncapping and lysis of adhesions were successful in two and failed in two. The operative procedures were somewhat more varied in the nine cases in which there was cortical degeneration. Complete excision was carried out in three cases, with success in two. Incomplete excision was carried out in four cases, with success in one and improvement in three. Lysis of meningeal adhesions gave only temporary relief (for one year) in one instance, and excision of motor areas (for the face and arm) failed to control convulsions in one. In spite of the lack of standardization of surgical procedures in the cases of degenerative lesions, favorable results were obtained in six of the nine cases. From these results it is evident that the type of surgical procedure, though important, is not the only determining factor in prognosis. In the combined series a second operation with complete excision was performed in two cases, because of failure following partial extirpation. The radical procedure was successful in one case, that of a degenerative lesion, and failed in the other, that of a cortical scar. The type of pathologic lesion, though probably not without significance, was of only slight aid in establishing a prognosis. From a prognostic standpoint the age of the patient failed to show any significant correlation. The temporal span during which convulsive episodes had been present showed a definite prognostic correlation. In seven of the eleven cases of cortical scar in which results were satisfactory the duration of convulsions was not more than two years, while in the four failures convulsions were present for more than two years. In four of the six cases of degeneration in which the results were satisfactory convulsions had been present for three years or less, while in two of the three cases of failure convulsions had occurred for more than three years. The group of cases of porencephaly was too small to justify statistical analysis. The maximal frequency of convulsions appeared to have no significant relation to prognosis. Analysis of the anatomic location of the lesion gave little evidence of prognostic significance. The parietal region was found to be the most frequent single site of all types of lesions, and the greatest proportion of satisfactory results was obtained in the group of parietal lesions. A definite traumatic basis was present in thirteen cases, while injury at birth was apparently responsible in seven cases. Previous cerebral operation was the presumptive factor in one case and thrombosis in another. In two cases porencephaly was probably related to prenatal factors, and in one case it was perhaps secondary to infection. No relation could be established between etiologic factors and prognosis. The pathologic lesions ranged from simple degeneration of ganglion cells, through degeneration with glial proliferation, to dense glial or fibrous scars. Definite glial scars were seen in the walls of porencephalic cavities.

Physical Development in Mongolism.—Benda finds, after the clinical examination of 120 persons with mongolism, that the condition is present at birth. Therefore the influence which leads to the condition of mongolism is predominant during the prenatal period. After birth there are residuals of such an influence, and one finds remarkable retardation in development. Many mongoloid children die in the first years of life. If the child survives the first few years, he adjusts himself fairly well to the biologic conditions of life. Growth is slow but at a low normal level during the first nine years. Increase in height ceases early, and after the fifteenth year few mongoloid persons show further growth. Mongoloid children are usually underweight during the first two years of life. Many become overweight after the fifth year and dystrophia adiposogenitalis is frequent after puberty. The mongoloid skull is not microcephalic at birth but shows lack of growth. All mongoloid children appear microcephalic after six months. Persons with mongolism usually show early ossification and fusion of the epiphysial lines, even when the condition is complicated by rickets. The investigation has proved that mongoloid deficiency is not a racial mutation but the result of a disturbance which becomes apparent during fetal development. The mongoloid appearance is due to a peculiar formation of the skull and has nothing to do with the Mongolian race or any kind of atavistic regression.

Endocrinology, Los Angeles

23: 681-826 (Dec.) 1938

*Diabetes Mellitus Associated with Hyperthyroidism. D. P. Foster and W. L. Lowrie Jr., Detroit.—p. 681.
Method of Assaying the Potency of Anterior Pituitary Extracts Which Increase Liver Fat. J. Campbell, Toronto.—p. 692.
Evaluation of the Frank Method for the Determination of Prolan (Gonadotropic Principle) in the Urine of Nonpregnant Women. Della G. Drips and A. E. Osterberg, Rochester, Minn.—p. 703.
Photocolorimetric Method for Determination of Androsterones in Urine. R. Neustadt, Boston.—p. 711.
Specific Metabolic Principle of the Pituitary and Its Relation to the Melanophore Hormone. D. K. O'Donovan and J. B. Collip, Montreal.—p. 718.
Studies of Effects of Pituitary Extracts on Carbohydrate and Fat Metabolism. A. H. Neufeld and J. B. Collip, Montreal.—p. 735.
The Specific Dynamic Action Test in Castrated and Menopausal Women. W. M. Moffat, Santa Barbara, Calif.—p. 747.
Influence of Various Physiologic Substances on Glycogenolysis of Surviving Rat Liver: Methods: Influence of the Bile Salts. H. P. G. Seckel, Chicago.—p. 751.
Id.: The Influence of Insulin Added in Vitro. H. P. G. Seckel, Chicago.—p. 760.
Insulin Therapy in Mental Diseases. D. V. Conwell and C. J. Kurth, Halstead, Kan.—p. 767.
Effect of Testosterone Propionate on Genital Tract of the Immature Female Rat. U. J. Salmon, New York.—p. 779.
*Use of Testosterone Propionate in Functional Bleeding. S. H. Geist, U. J. Salmon and J. A. Gaines, New York.—p. 784.
Influence of Estrogens in Egg Yolk on Avian Blood Calcium. M. Altmann and F. B. Hutt, Ithaca, N. Y.—p. 793.
Protamine Insulin: Three Practical Points. G. B. Robson and H. Gray, San Francisco.—p. 800.
*Treatment of Acne Vulgaris with Testosterone Propionate. M. Molitch, Philadelphia.—p. 803.

Diabetes Mellitus and Hyperthyroidism.—When diabetes mellitus and hyperthyroidism coexist Foster and Lowrie believe that the diagnosis of diabetes mellitus is usually made first. Certain features during the course of the illness arouse suspicion

that thyroid disease may be a complicating factor. An inability to control the blood sugar and glycosuria with what seems to be a suitable diet and insulin dosage or the failure of a patient to hold his weight or to gain while consuming a diet adequate for either circumstance is significant. These patients also are prone to develop acidosis, especially if they are losing weight or are undernourished. A rapid pulse, intolerance to heat or bedclothes, restlessness, flushing, apprehension, a moist skin and eye signs are all aids to a correct diagnosis, particularly in the younger patient. Forty-two cases of diabetes associated with hyperthyroidism were found in the admissions to the Henry Ford Hospital from 1925 to 1938. During this period there were 214,223 new cases examined. Diabetes was present in 1,616 of these and a total of 1,607 operations for hyperthyroidism were done. Nine patients have died. They had an average survival period of four years and one month. Vascular disease was a primary or complicating factor in all the deaths. Toxic adenoma was present in six. Evidence is presented which would indicate that following thyroidectomy the carbohydrate metabolism was improved. The authors believe that the diagnosis of hyperthyroidism as a complication of diabetes mellitus is being overlooked. When hyperthyroidism is complicating diabetes mellitus, thyroidectomy is indicated. Vascular disease associated with hypertension, since insulin has been available, constitutes the major cause of death in this group. Acidosis is common but can be successfully combated by a high carbohydrate diet and adequate insulin.

Testosterone Propionate in Functional Bleeding.—Geist and his colleagues used testosterone propionate in the treatment of twenty-five women with functional uterine bleeding. The bleeding was rapidly controlled in all but two of the cases. This improvement was correlated with definite changes in the endometrium, as revealed by suction biopsies performed at intervals before, during and after treatment. In all but four of the women there was no palpable organic disease; small intramural myomas were present in these four. There were thirteen cases of menorrhagia, five of menometrorrhagia and seven of menorrhagia with polymenorrhea. The ages of the patients varied from 24 to 39 years. The duration of abnormal bleeding varied from two months to ten years, with an average of two years. The monthly dosage varied from 300 to 1,000 mg. of testosterone propionate. The highest dosage given any single patient was 2,150 mg. over a period of three months. The testosterone propionate was administered intramuscularly in sesame oil in doses of from 5 to 100 mg. The intervals between doses are determined individually. Normal menses were established in eighteen cases and amenorrhea of one to five months in five. Endometrial biopsies performed during and after the period of testosterone propionate administration revealed disappearance of the secretory phase and inhibition of the proliferative phase, often with regression to the hypoplastic or atrophic state. Following the discontinuation of therapy, the inhibitory effects on the endometrium gradually disappear and normal estrogen and progesterone effects reappear. The authors suggest that the changes in the endometrium following testosterone propionate therapy are the end results of a primary inhibition of the gonadotropic factors of the hypophysis, causing suppression of the ovarian cycle, with consequent cessation of estrogen and progesterone production.

Treatment of Acne Vulgaris with Testosterone Propionate.—Molitch selected twenty-two young men with acne vulgaris, otherwise healthy, for his study. The lesions varied from the mildest to the most severe forms. All the subjects received three weekly intramuscular injections without any local treatment, internal medication or change of diet. Twelve of the patients received injections of the testosterone in sesame oil, whereas the remainder were given only sesame oil. No local or systemic reactions occurred in either group. The treated group was given injections for three months; the dose for the first month was 5 mg., for the second month 10 mg. and for the third month 25 mg. The control group received 1 cc. of sesame oil at each injection. About the same degree of improvement (from 50 to 60 per cent) occurred in the two groups. Seven additional men were treated locally with an ointment containing testosterone propionate with similar results. It is possible that acne vulgaris may be relieved by this product if an associated hypogonadism is present. The high percentage of improvement obtained in both groups suggests that a definite psychogenic element was present in the subjects. No increase in the incidence of nocturnal emissions or erections was noted.

Georgia Medical Association Journal, Atlanta

27: 461-506 (Dec.) 1938

Would You Recognize a Case of Glaucoma? S. C. Howell, Atlanta.—p. 461.
Traumatic Perforation of the Intestines Without Visible Injuries to the Abdominal Wall: Report of Cases. Q. A. Mulkey, Millen.—p. 465.
Squamous Cell Carcinoma Arising in a Cystic Teratoma of the Ovary: Report of Case. E. S. Cardwell Jr. and E. R. Pund, Augusta.—p. 469.
Purulent Meningitis Complicating Paratyphoid Fever: Report of Case with Recovery. W. E. Storey, Columbus.—p. 472.

Journal of Bacteriology, Baltimore

36: 571-706 (Dec.) 1938

Method of Electrical Conductivity in Studies on Bacterial Metabolism. J. B. Allison, J. A. Anderson and W. H. Cole, New Brunswick, N. J.—p. 571.
Nitrogen Availability as an Aid in Differentiation of Bacteria in the Coli Aerogenes Group. N. B. Mitchell and M. Levine, Ames, Iowa.—p. 587.
Sugar Alcohols: XVII. Utilization of Sorbitol, Styracitol, Sorbose, Pinitol, Primulitol and Hydroxypyruvic Aldehyde by Various Micro-Organisms. K. P. Dozois, C. J. Carr and J. C. Krantz Jr., Baltimore.—p. 599.
Bacterial Oxidation Reduction Studies: I. Differentiation of Species of Spore-Forming Anaerobes by Potentiometric Technic. R. W. H. Gillespie and L. F. Rettger, New Haven, Conn.—p. 605.
Id.: II. Differentiation of Lactobacilli of Diverse Origin. R. W. H. Gillespie and L. F. Rettger, New Haven, Conn.—p. 621.
Id.: III. Characteristic Potentials of Cultures of Aerobacillus Species. R. W. H. Gillespie and J. R. Porter, New Haven, Conn.—p. 633.
Studies on Steam Sterilization and Effects of Air in the Autoclave. A. Hoyt, A. L. Chaney and Korine Cavell, Los Angeles.—p. 639.

Journal of Experimental Medicine, New York

69: 1-178 (Jan.) 1939

Vascularization of the Cornea of the Rat in Riboflavin Deficiency, with Note on Corneal Vascularization in Vitamin A Deficiency. O. A. Bessey and S. B. Wolbach, Boston.—p. 1.
A Neoplasm of Monocytes of Mice and Its Relation to Similar Neoplasms of Man. J. Furth, with assistance of C. Breedis, New York.—p. 13.
Infectious Myxomatosis of Rabbits: Studies of Soluble Antigen Associated with the Disease. T. M. Rivers, S. M. Ward and J. E. Smadel, New York.—p. 31.
*Detection of the Virus of Poliomyelitis in the Nose and Throat and Gastrointestinal Tract of Human Beings and Monkeys. S. D. Kramer, B. Hoskwith and L. H. Grossman, Brooklyn.—p. 49.
*A Spreading Factor in Certain Snake Venoms and Its Relation to Their Mode of Action. F. Duran-Reynals, New York.—p. 69.
Mixed Molecules of Hemocyanins from Two Different Species. A. Tiselius, Uppsala, Sweden, and F. L. Horsfall Jr., New York.—p. 83.
Molecular Weight of Antibodies. E. A. Kabat, Uppsala, Sweden.—p. 103.
Electrophoretic Study of Immune Serums and Purified Antibody Preparations. A. Tiselius and E. A. Kabat, Uppsala, Sweden.—p. 119.
Lymphatic Pathway from Nose and Pharynx: Dissemination of Nasally Instilled Vaccinia Virus. J. M. Yoffey and E. R. Sullivan, Boston.—p. 133.
*Precipitinogen in Serum Prior to Onset of Acute Rheumatism. A. F. Coburn and Ruth H. Pauli, New York.—p. 143.
Observations on Relation of the Eye to Immunity in Experimental Syphilis. A. M. Chesney, A. C. Woods and A. D. Campbell, Baltimore.—p. 163.

Detection of the Virus of Poliomyelitis.—Kramer and his co-workers recovered four strains of poliomyelitis virus from the nasal washings and feces of human beings and one strain from a monkey killed at the height of the disease. Of the four human strains the first was isolated from the feces of a 14 year old child seven days after the onset of illness, the second strain from the nasal washings of a 6½ year old child five days after the onset of illness and the third and fourth strains from the same patient, a 2½ year old child, nine days after the onset of illness. The single monkey strain was isolated from the upper intestinal segment. The detection of the virus in the nasal washings of two additional patients during convalescence lends further support to the authors' belief that the virus of poliomyelitis is spread by human contact. The recovery of the virus from the feces indicates that the virus withstands the gastric acidity which under normal physiologic conditions tends to keep gastric contents relatively free of bacteria and that improper disposal of feces from patients with poliomyelitis may have serious consequences to the public health, particularly in smaller com-

munities, in which inadequate sewage disposal may result in contamination of surrounding beaches or even local water systems.

Action of Snake Venoms.—Duran-Reynals tested the spreading factor in snake venom by mixing 0.5 cc. of different dilutions of venom with 0.25 cc. of diluted india ink and injecting this into one flank of a rabbit. On the opposite side 0.5 cc. of saline solution in place of the venom was injected. It was found that the venom of several species of poisonous snakes acts to spread india ink through the skin. The spreading factor is most abundant in the venom of the Viperidae (rattlesnake) family and relatively scant in the venom of Colubridae proteroglypha (cobra) family and it is absent from toad venom. Extracts of the supralabial glands of harmless snakes contain only negligible amounts of the factor. Rattlesnake venom heated at from 65 to 100 C. loses a large proportion of its toxicity but retains the ability to spread india ink. Rattlesnake venom that has lost its toxicity on standing or on heating markedly enhances the infection produced by bacterial or virus suspension in the rabbit skin. Antivenin serum inactivates both the toxic and the spreading factors of venom.

Precipitinogen in Serum Prior to Rheumatism.—The evolution of a rheumatic attack involves three distinct clinical phases: (1) an acute respiratory infection, usually of not more than three days' duration, (2) an afebrile, symptom free period, which may vary somewhat but commonly lasts fourteen days, and (3) the period of acute rheumatism, composed of one or more cycles of activity. Coburn and Pauli observed that serums taken at the height of an acute rheumatic attack showed definite precipitation with serums taken within a week before the onset of symptoms. Pairs of serums which reacted with each other were then tested separately against other serums from the same patient. The results of these observations showed that precipitation occurred only between phase 2 and phase 3 serums. In at least six other cases known positive phase 2 serums were tested against each other and known positive phase 3 serums were also tested in pairs. No reactions occurred between any of these combinations. This limitation of the reaction to the combination of phases 2 and 3 furnished a plan on which extensive investigations were based. Serums from phase 2 (and also, when available, from phase 1) were tested as potential antigens against serums from phase 3. A precipitin reaction occurred between serums taken just before and shortly after the onset of acute rheumatism. It recurs with repeated rheumatic cycles.

Journal of Immunology, Baltimore

35: 415-494 (Dec.) 1938

The *p*H-Stability of the Elementary Bodies of Vaccinia. J. W. Beard, H. Finkelstein, Durham, N. C., and R. W. G. Wyckoff, Princeton, N. J.—p. 415.
Studies of Antimeningococcus Serum: II. Complement-Fixing Activity of Serums from Horses Under Immunization with Suspensions of Living Cells or with Broth Culture Filtrates of the Meningococcus. Grace M. Sickles and Christine E. Rice, Albany, N. Y.—p. 427.
Some Factors Which Affect the Ultrafiltration of Antipneumococcus Serums. K. Goodner, F. L. Horsfall Jr. and J. H. Bauer, New York.—p. 439.
Neutralization of Pneumococcus Capsular Polysaccharide by the Antibodies of Type Specific Antiserums. K. Goodner, F. L. Horsfall Jr. and J. H. Bauer, New York.—p. 451.
Further Studies on the "Nonabsorbable" Protective Property in Serum from Rats Infected with Cysticercus Crassicollis. D. H. Campbell, Chicago.—p. 465.
The Nonspecific Nature of the Carbohydrate Portion of Horse Pseudoglobulin. R. D. Coghill and Martha Creighton, New Haven, Conn.—p. 477.

Journal Industrial Hygiene & Toxicology, Baltimore

20: 593-652 (Dec.) 1938

Respiratory and Circulatory Adaptation to Acute Anoxia in Silicosis and Cardiovascular Disease. M. H. Seevers, N. Enzer and T. J. Becker, Madison, Wis.—p. 593.
*Granite Workers' Nasal Resistance in Breathing. E. C. J. Urban, Barre, Vt.—p. 635.
Lead in the Printing Industry. J. M. Hepler, P. F. Rezin and R. W. Colina, Lansing, Mich.—p. 641.

Granite Workers' Nasal Resistance in Breathing.—The results of a nasal study that Urban made among 139 granite cutters indicate that the nose may play some part as a protective device in workers exposed to dust hazards. However, this part appears to be slight and shows its effect only over long periods of time. At best it is only one of the factors involved in silicosis. Since the great percentage of the granite workers die of an added tuberculous infection, other factors such as personal habits, physical condition and infected contacts are more important than nasal efficiency.

Journal of Pharmacology & Exper. Therap., Baltimore

64: 355-486 (Dec.) 1938

Influence of Room Temperature on the Action of Barbiturates. J. Raventós, Edinburgh, Scotland.—p. 355.
Chronic Effects on Dogs of Feeding Diets Containing Lead Acetate, Lead Arsenate and Arsenic Trioxide in Varying Concentrations. H. O. Calvery, E. P. Laug and H. J. Morris, Washington, D. C.—p. 364.
Effect of Lead on Rats Fed Diets Containing Lead Arsenate and Lead Acetate. E. P. Laug and H. P. Morris, Washington, D. C.—p. 388.
Storage of Arsenic in Rats Fed a Diet Containing Arsenate and Arsenic Trioxide. H. J. Morris and E. W. Wallace, Washington, D. C.—p. 411.
The Growth and Reproduction of Rats Fed Diets Containing Lead Acetate and Arsenic Trioxide and the Lead and Arsenic Content of Newborn and Suckling Rats. H. P. Morris, E. P. Laug, H. J. Morris and R. L. Grant, Washington, D. C.—p. 420.
Influence of Calcium and Phosphorus on the Storage and Toxicity of Lead and Arsenic. R. L. Grant, H. O. Calvery, E. P. Laug and H. J. Morris, Washington, D. C.—p. 446.
Variations in the Arginase Concentrations in the Livers of White Rats Caused by the Administration of Arsenic and Lead. H. D. Lightbody and H. O. Calvery, Washington, D. C.—p. 458.
Effects of Vitamin B on Insulin Hypoglycemia and Sugar Tolerance. J. C. Burke and A. R. McIntyre, Omaha.—p. 465.

Laryngoscope, St. Louis

48: 847-914 (Dec.) 1938

Affections of the Cricopharyngeal Fold. V. E. Negus, London, England.—p. 847.
Diphtheritic Stenosis of Larynx: Complete Loss of Voice, Cure by Inlying Bouginage Consisting of Series of Metal Beads. E. L. Myers, St. Louis.—p. 859.
*Radium Therapy for Recurrent Epistaxis in Hereditary Hemorrhagic Telangiectasia. J. A. Weiss, Chicago.—p. 865.
Discussion of the Relation of Nasal Polyps to the Keloid. E. R. Hargett, Springfield, Ohio.—p. 870.
Salivary Calculi. L. R. Effler, Toledo, Ohio.—p. 877.
Effect of Sulfhydryl Compounds in Otolaryngology. W. M. Fitzhugh Jr., San Francisco.—p. 884.

Radium Therapy for Recurrent Epistaxis.—Weiss reports a case of hereditary hemorrhagic telangiectasia with recurrent epistaxis. Radiation therapy was given to a total dosage of 300 mg. hours intranasally and 40,000 mg. hours by teleradiation. The beneficial result was temporary. Further treatment with moccasin snake venom has been instituted.

New England Journal of Medicine, Boston

219: 977-1014 (Dec. 22) 1938

Cheyne-Stokes Respiration and Auriculoventricular Conduction. W. J. Comeau, Boston.—p. 977.
Lung Abscess Due to Esophageal Overflow. D. A. Sampson, Boston.—p. 982.
Clinical Chart for Chronic Arthritis. M. G. Hall, R. Sanderson and T. Feldman, Boston.—p. 985.
Sulfanilamide in Undulant Fever. E. C. Bartels, Boston.—p. 988.
The Simplification of Laboratory Diagnosis for the General Practitioner. H. D. Levine, Bristol, N. H.—p. 989.
Progress in Urology. F. H. Colby, Boston.—p. 992.

219: 1015-1060 (Dec. 29) 1938

Menopause Arthralgia: Study of Seventy-One Women at Artificial Menopause. F. C. Hall, Boston.—p. 1015.
The Quantitative Determination of Urinary Coproporphyrin. K. Dobriner and C. P. Rhoads, New York.—p. 1027.
*The Significance of Urea-Splitting Bacteria in the Formation of Urinary Calculi. R. Chute, Boston.—p. 1030.
Progress in the Study of Cardiovascular Disease. S. McGinn, Boston.—p. 1032.

Urea-Splitting Bacteria and Urinary Calculi.—According to Chute, urea-splitting bacteria are frequently found in association with and as the apparent cause of the formation of urinary calculi, especially recurrent and multiple calculi. The importance of this fact is not generally recognized. A review of all patients with urinary stone entering the Massachusetts General Hospital during 1937 showed that more than half had an infection with a urea-splitting organism as the only apparent cause. The commonest organism (60 per cent) was the proteus bacillus, then nonhemolytic streptococci, staphylococci, Bacillus pyocyaneus, Bacillus influenzae and Micrococcus flavus, in order of frequency. Of the patients with recurrent stones 80 per cent

were infected with urea-splitting bacteria, and 67 per cent with urea-splitting bacteria had multiple or recurrent stones. Thus, recurrent or multiple stones and such infections go hand in hand. These infections, especially those due to the proteus bacillus, are often difficult to cure. They are almost never eradicated permanently until existing stones and also stasis have been removed. Chronicity of infection lessens the chance of permanent cure. The use of ammonium chloride as a urinary acidifier in infections of this type is contraindicated. Sulfanilamide has been the most effective form of drug therapy.

Psychoanalytic Quarterly, Albany, N. Y.

7: 421-606 (Oct.) 1938

Problems of Psychoanalytic Technic. O. Fenichel, Los Angeles.—p. 421.
Use of Automatic Drawing in the Interpretation and Relief of a State of Acute Obsessional Depression. M. H. Erickson, Eloise, Mich., and L. S. Kubie, New York.—p. 443.
Psychoanalytic Investigation of and Therapy in the Borderline Group of Neuroses. A. Stern, New York.—p. 467.
Suicide, Pregnancy and Rebirth. Bettina Warburg, New York.—p. 490.
Dream Observations in a Two Year Four Months Old Baby. M. Grotjahn, Chicago.—p. 507.
Preliminary Phases of the Masculine Beating Fantasy. E. Bergler, New York.—p. 514.
Defense and Synthesis in the Function of the Ego: Some Observations Stimulated by Anna Freud's "The Ego and the Mechanisms of Defense." T. M. French, Chicago.—p. 537.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

14: 91-198 (Dec.) 1938

Cytology of Leprosy. E. V. Cowdry, St. Louis.—p. 95.
Some Army Experiences in the Treatment of Tuberculosis by Heliotherapy. A. T. Cooper, San Juan.—p. 124.
Closed Intrapleural Pneumonolysis: Preliminary Analysis of 200 Cases. J. Smith, Rio Piedras.—p. 138.
*Clinical and Hematologic Review of Sprue Based on Study of 150 Cases. R. M. Suárez, San Juan.—p. 157.

Clinical and Hematologic Review of Sprue.—Suárez believes that an accurate clinical diagnosis of sprue is extremely difficult, if not impossible, without the help of the laboratory. In his series of 150 cases all but two are native Puerto Ricans. There were more males (eighty-two) than females (sixty-eight). One third of the patients were less than 40 years of age. Young children and preadolescents and adolescents are frequently attacked by sprue, a point which might be helpful in distinguishing the disease from true pernicious anemia or addisonian anemia. The general appearance of a few of the older patients, with premature graying of the hair and the color of the skin, renders them indistinguishable from sufferers from pernicious anemia. The loss of subcutaneous fat and the wrinkling and pigmentation of the skin, more marked on the arms and legs, are some of the few external evidences favoring a diagnosis of sprue. The spleen, frequently enlarged or palpable in addisonian pernicious anemia, was invariably found to be small or of normal size in the present series. Furthermore, although purpuric or scorbutic spots were occasionally observed on the arms and legs of some of the older patients, in not a single case did the ophthalmoscopic examination reveal retinal hemorrhages. With the exception of one case (a patient whose marrow was probably in a hypoplastic state), in which the mean cell volume was found to be 89 cubic microns, the lowest mean cell volume in the series of 150 cases was 102 cubic microns, the highest 220 and the average for the series 123.6 cubic microns. The color index was found below 1 in twenty-three cases and as low as 0.7 and 0.64 in two cases. The highest color index was 2.2 and the average 1.22. The volume index was never below 1; the highest was 2.3 and the average 1.39. The mean cell hemoglobin varied between 26 and 59 micrograms, with an average of 36.6 micrograms. The lowest mean cell hemoglobin concentration was 20 per cent, the highest 45 and the average for the series 26.1 per cent. The hemoglobin ranged from 16.5 to 102 per cent, averaging 66 per cent, the erythrocytes from 690,000 to 4,410,000 per cubic millimeter with an average figure of 2,710,000. The lowest leukocyte count was 1,550, the highest 13,600 and the average 5,280 leukocytes per cubic millimeter. The author regards sprue as primarily a disease of the hematopoietic system and not of the gastrointestinal tract. Despite its low vitamin B content, concentrated liver extract was found to be highly beneficial in the treatment of sprue, including cases with spinal involvement.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Medical Psychology, London

17: 293-394 (Dec.) 1938

Individualism in Psychotherapy. E. A. Bennet.—p. 293.
*Some Etiologic Factors in the Pathology of Stammering. I. Latif.—p. 307.
The Principles of Caricature. E. Kris and E. Gombrich.—p. 319.
The Nescience of the Aranda. G. Róheim.—p. 343.

Etiologic Factors of Stammering.—Latif finds that claims to one universal treatment for all cases of stammering are not justified by actual results and that, whereas some disorders of speech yield to one kind of treatment, quite a large number of cases remain unaffected by it. The author attempts an analysis of a few etiologic factors in the onset and cure of stammering by presenting two sample cases from his clinical investigations. These cases illustrate that the causes of stammering and its treatment vary from one case to another. The first case shows that although stammering may have its inception in those factors (fear of parents, guilt because of masturbation, inferiority, imitation and fear of a stammering heredity) which may be regarded as more or less primary, other conditions, such as lack of steady control over breathing and voice and faulty habits of reading, may further complicate the etiology of the disorder during the course of its development. Consequently, no therapeutic measure can be really effective unless, along with the primary factors, it takes into account secondary conditions. Besides the analysis of the second patient's difficulties (which were similar to those of the first patient) in a state of relaxation, the author also tried a few exercises of musical drill with him. In addition to this he was assigned a few tasks requiring delicate handling of instruments in the laboratory in order to help him overcome his sense of inadequacy in manual skill. The period of treatment lasted over eleven months, after which the patient was completely cured. Oral or phonetic exercises were not resorted to during the entire course of treatment.

British Medical Journal, London

2: 1245-1296 (Dec. 17) 1938

Sciatica and Its Treatment. W. Harris.—p. 1245.
Intervertebral Disk Lesions as Cause of Sciatica. J. S. Barr.—p. 1247.
Orthopedic Aspects of Sciatica. W. A. Cochrane.—p. 1251.
The Xenopus Pregnancy Test. E. R. Elkan.—p. 1253.
Use of the Skin of the Female Breast in Plastic Surgery. J. F. S. Esser.—p. 1256.
Behavior of Tuberculous Cavities in the Lung Under Artificial Pneumothorax Treatment. L. Roberts and W. Pagel.—p. 1258.

2: 1297-1350 (Dec. 24) 1938

Modern Views in the Prevention of Tuberculosis. D. M. Dunlop.—p. 1297.
*Four Cases of Weil's Disease Infected from the Same Stream. K. M. Robertson.—p. 1300.
Mastoid Operations: Further Survey. W. Howarth and G. Bateman.—p. 1304.
*Association of Stammering and the Allergic Diathesis. A. M. Kennedy and D. A. Williams.—p. 1306.
Three Cases of Intussusception in the Adult, with Reference to Etiology. C. L. Heanley.—p. 1309.
Congenital Deformities of Legs. R. Broomhead.—p. 1311.

Weil's Disease.—During the last two years, Robertson treated four cases of leptospirosis. In addition to these he has had under his care three other possible but unproved cases. The diagnosis should escape no one when jaundice associated with nephritis and nitrogen retention follows an acute febrile illness in which headache, severe muscular pain and scattered hemorrhages have been well marked. In the very earliest stages the clinical picture is suggestive enough to make justifiable the use of serum before the diagnosis can be proved. Sudden onset of a severe illness, with headache (quite frequently meningeal signs), high fever, severe pain, great tenderness in the muscles of the extremities, hemorrhages from the nose and the gastrointestinal and urinary tracts and a most characteristic watery suffusion of the conjunctivae should make it possible for the condition to be suspected. If in the presence of these symptoms and signs there is the history of a possible source of infection to which the patient has recently been subjected, serum treatment should be instituted at once without waiting for the diag-

nosis to be confirmed by laboratory studies. A fuller and wider knowledge of the infection and its manifestations should bring to light other cases. Of the four proved cases of Weil's disease, three occurred as the result of bathing in one river. These three patients (boys) recovered. The fourth patient was infected from the same river, in which he worked.

Stammering and the Allergic Diathesis.—Kennedy and Williams examined a consecutive series of 100 children who stammered. These children were from 5 to 14 years of age. Of the children examined eighty-one were boys and nineteen girls, eighty-nine proved to be right handed and eleven left handed, and a family history of stammering was present in sixty-five cases and absent in thirty-five. Fifty-two children gave a personal history of allergic manifestations: Migraine plus urticaria and/or asthma was complained of by thirty-two, eleven complained of urticaria alone, in eight there was a history of asthma plus eczema and/or hay fever, and one suffered only from eczema. Thirty of these fifty-two children also gave a history of "fastidiousness" with regard to food generally and dislikes or refusals of particular foods or gastrointestinal upsets after them. Of these fifty-two children with a personal history of allergy forty-eight also had a family history of allergy. In thirty-seven cases one or both parents exhibited allergic manifestations and in six a grandparent was the nearest sufferer. An aunt was the nearest relative in four cases and the allergic symptoms were observed in a sister of the child in one case. Thirty-three of the fifty-two children (including the four with no allergic family history) had a family history of stammering. Seven of the fifty-two children were left handed; six of these seven had a family history of allergy and two also a family history of stammering. In the forty-eight children who gave no personal history of allergic manifestations a family history of allergy was obtained in all except one. Fifteen of these children, however, gave a history of "fastidiousness" with regard to food generally and dislikes or refusals of particular foods, or gastrointestinal upsets after them. One or both parents of thirty-seven of these forty-seven children suffered from allergy, a grandparent of five, an aunt of two and a sister of three. Thirty-two of the forty-eight children (including the one with no allergic family history) had a family history of stammering. Four of the forty-eight children were left handed and all had an allergic family history. Three also had a family history of stammering. The close and practically constant association of stammering and allergic manifestations in the personal and family histories of the stammerer, as revealed by the present investigation, rather favors the view that there is something more than a mere casual relationship between stammering and the allergic diathesis.

Lancet, London

2: 1395-1448 (Dec. 17) 1938

The Hemolytic Anemias of Childhood. L. G. Parsons.—p. 1395.
*Late Results in Diverticulitis. J. P. Lockhart-Mummery.—p. 1401.
*Fluid Balance in Ménière's Disease. T. Cawthorne and Mary N. Fawcett.—p. 1404.
Ménière's Syndrome: Observation. R. Peacock.—p. 1409.
*Treatment of Rheumatoid Arthritis with a New Gold Salt. S. J. Hartfall, H. G. Garland and W. Goldie.—p. 1410.

Late Results in Diverticulitis.—Lockhart-Mummery analyzes the late results of 136 cases of the more severe types of diverticulitis. Ninety-one patients were operated on and forty-five were not. The latter were treated with frequent doses of liquid petrolatum to keep the contents of the colon liquid. Many of them had further attacks, but when they were careful to adhere to the regimen advised the attacks usually ceased and the patients remained in good health for long periods. Nevertheless, two of them died subsequently from the condition: one from sepsis and the other from a sudden perforation and acute peritonitis. Both patients had refused operation. In all the patients not operated on the diverticula have increased both in size and in number. Small diverticula have become large, and fresh diverticula have appeared in previously free areas of the colon. This shows that the weakness of the musculature of the intestinal wall and the tendency to herniation of the mucous membrane once started cannot be arrested. There were fifteen deaths in the entire series directly attributable to diverticulitis. In thirteen cases the abdomen was opened and after the adhesions between the affected part of the colon and other structures were freed the bowel was wrapped in omentum and sewn into place with fine catgut stitches and displaced into the left side of the false pelvis. The patients were saved a colostomy opening and have remained in good health for from six to fifteen years after operation. Three had occasional attacks of pain and tenderness during the first two years but after that no symptoms at all. One patient so treated developed an endocarditis eight years later but is still alive. Colostomy, usually a transverse colostomy, was performed in thirty-eight cases. Of these patients four died. The remaining thirty-four survived for long periods and have remained free from symptoms. There seems to be no doubt that colostomy is the safest and most satisfactory method of treating bad cases of diverticulitis in which medical treatment will not stop repeated acute attacks or serious complications have occurred or threaten. Twelve patients had perforation into the bladder followed by a vesicocolic fistula. Several were treated by colostomy, followed a year later by resection of the affected colon and closure of the vesical fistula. They did well with the exception of the patient in whom fatal endocarditis developed three years after closure of the colostomy. In seventeen cases resection of the affected portion of intestine with temporary cecostomy or colostomy was performed. Four of these patients died but the remaining thirteen made good recoveries and had no further symptoms referable to diverticulitis. These patients are the only ones that can be considered to have been cured in the proper sense of the word. Exploratory abdominal section was performed in forty-three cases (apart from other operations) with five deaths. Appendicostomy was performed in five cases; in these cases in spite of careful medical treatment and a petrolatum regimen acute attacks of diverticulitis recurred. Appendicostomy proved successful; in all but one the attacks eventually stopped and the patients have remained in good health since. In one case attacks of chronic obstruction recurred and a transverse colostomy was made and the appendicostomy opening was closed. Chronic septic foci elsewhere in the body developed subsequently in fourteen cases, which included seven cases of severe arthritis, four of endocarditis and one each of septic iritis, cerebral abscess and subacute combined degeneration of the cord. This suggests that the original diverticulitis was responsible for the foci, as none of the author's thirteen patients successfully treated by resection developed such foci.

Fluid Balance in Ménière's Disease.—Cawthorne and Fawcett studied the effect of various salt and fluid intakes on the symptoms of Ménière's disease in eleven cases. All but one were affected to a greater or lesser degree by variations in the intake of fluid and salt. Any steps taken to favor the retention of fluid within the body resulted in an aggravation of the symptoms, whereas the reverse was true when excretion of fluid was encouraged. In nine cases this fluctuation of the symptoms was accompanied by variation in the hearing capacity; thus, when the symptoms were more marked the hearing was worse and vice versa. None of the patients under review tended to retain fluid unduly, although they were all sensitive to variations in the salt and fluid intake. It seems that imperfect functioning of the pressure-regulating mechanism of the endolymphatic system places the affected labyrinth under the influence of any factors that may effect the secretion or absorption of endolymph on that side. It is not unreasonable to suppose that an increase of the fluid content of the body may favor an increase of the intralabyrinthine pressure. It is recommended that an antiretentional regimen should form part of the investigation of every patient with Ménière's disease.

New Gold Salt for Arthritis.—Hartfall and his colleagues used methyl glucamide of aurothiodiglycollic acid, the total gold content being 50 per cent, in the treatment of fifty cases of rheumatoid arthritis. The dosage has been approximately half that previously used with other gold preparations but the curative results have been equaled or surpassed. Toxic reactions occurred in a fourth of the patients.

Archives des Maladies du Cœur, Paris

31: 1079-1174 (Nov.) 1938. Partial Index

Severe Cardiac Insufficiency by Nodular Coronaritis: Case. C. Laubry, P. Soulié and J. Lenègre.—p. 1079.

*Permanent Arterial Hypertension Obtained by Section of Regulators of Pressure and Its Action on Kidney. Mlle. G. Hœrner, R. Fontaine and P. Mandel.—p. 1090.

Subtotal Thyroidectomy in Cardiopathies of Hyperthyroid Origin Without Classic Signs of Hyperthyroidism. E. Coelho.—p. 1099.

Effect on Kidney of Hypertension.—Hœrner and her associates report studies on the question whether all types of arterial hypertension which persist for a sufficient length of time will necessarily react on the kidneys. They made experiments on dogs. The hypertension by section of the depressors was performed according to the method of C. Heymans; that is, at one session and under morphine-ether anesthesia, they resected on each side the internal portion of the vagus nerve (corresponding to the depressor nerve) and the carotid branch. If this operation is carried out correctly and completely, it induces regularly a permanent arterial hypertension. After this intervention the animals were kept under normal conditions of life and their arterial tension was regularly controlled. After from eighteen to twenty-four months had elapsed, a time that was judged sufficient for renal symptoms to develop, the authors tested the renal function of the dogs. Summarizing the results of these renal tests they say that two years after hypertension had been induced by sectioning of the nerves regulating arterial hypertension the dogs retained a normal renal function. The hypertension of extrarenal origin did not influence the function of the kidney. Contradictory reports about the microscopic aspects of the kidneys in experimental chronic hypertension induced the authors to make microscopic studies. They performed a unilateral nephrectomy, extirpating the right kidney in each of the animals. The animals became readily adapted to the unilateral nephrectomy, and the microscopic examination of longitudinal and transverse sections of the extirpated kidney showed no lesion that could be attributed to hypertension.

Archives Méd.-Chir. de l'App. Respiratoire, Paris

13: 161-246 (No. 3) 1938

*Pathogenesis and Treatment of Asthma. P. De Bersaques and A. Bérat.—p. 161.

Extrapleural Pneumothorax. R. Nissen.—p. 196.

Pneumolysis Followed by Extrapleural Pneumothorax or Oleothorax as Method of Collapse Therapy in Treatment of Pulmonary Tuberculosis. W. Schmidt and K. Briest.—p. 202.

Ventral Decubitus in Thoracic Surgery. M. Iselin and A. Julia.—p. 214.

What Is Disclosed in Profile (Transverse) Roentgenography of Lung. P. Pruvost.—p. 223.

Pathogenesis and Treatment of Asthma.—De Bersaques and Bérat stress the importance of the constitutional factor in the pathogenesis of asthma and show that an effective therapy of this disorder can be realized only when the complex problem of the asthmatic constitution becomes clarified. By objective and thorough examinations of forty asthmatic patients, they attempted to throw some light on this problem. In the clinical examinations of the asthmatic patients they gave attention to such factors as age, profession, pulse rate, blood pressure and the reflexes. Asthma occurs with equal frequency in the two sexes, but in women the appearance or disappearance of the asthmatic crises is influenced by menstruation, the menopause and pregnancies. They stress the neurovegetative instability, calling attention to the frequency of tachycardia and of exaggerated reflexes in asthmatic patients. Moreover, they show diagrams which indicate that the sphygmolability of asthmatic patients is much greater than that of other persons. In view of the great nervous instability of asthmatic patients, asthma has been designated as a respiratory neurosis. Psychic factors play a part, for many asthmatic persons are psychopathic, and psychoanalytic methods effect cure in some cases. Further the authors report their observations on the chemical aspects of the blood and of the urine, on the leukocytic formulas, on the basal metabolic tests and on the cutireactions in asthmatic patients. Summarizing their studies on the pathogenesis, they emphasize that asthma does not have a single cause but that three factors are of equal importance in the pathogenesis: (1) the respiratory factor, (2) the instability of the neurovegetative system and (3) the hepatic factor. In discussing the therapy of asthma, they first take up the treatment. They prefer products containing 0.25 mg. of epinephrine and from 0.03 to 0.04 Gm. of ephedrine. Thus they avoid as much as possible the brutal and disagreeable vascular reactions and prolong the desired bronchial action. In the treatment during the periods between the attacks they take account of the aforementioned three pathogenic factors. They think that treatment with antivirus vaccine is useful in counteracting the respiratory factor. To modify the neurovegetative instability they recommend sedatives, particularly the combination of belladonna, ergotamine and phenobarbital, and sympathicotropic preparations such as ephedrine. To counteract the hepatic disorders they recommend dietetic measures, choleretics and cholecystokinetics and they say that the antitoxic hormone of the liver (discovered by Sato) exerts a favorable action on the evolution of asthma. In the cases in which the existence of an allergen is definitely proved, methods of desensitization are indicated. However, the authors think that such cases are rare, because hypersensitivity is the result of a constitutional status in which the liver plays an important part. Except in cases of established anaphylaxis, desensitization should be resorted to only after all other measures have failed.

Revue Française de Pédiatrie, Paris

14: 209-320 (No. 3) 1938. Partial Index

*Ocular Tests of A Hypovitaminosis in Children of School Age. L. Caussade, Neimann, Thomas and Davidsohn.—p. 209.

Observations on Treatment of Croup in Last Four Years at Pediatric Clinic of Bologna. V. Migliori.—p. 224.

Syndrome of Guillain, Barré and Strohl in Children. P. Gautier, G. de Morsier and A. Bron.—p. 247.

Verification of Tests on C Hypovitaminosis in Children of School Age. Neimann and Dedun.—p. 253.

*Nocturnal Enuresis: Hyptiogenesis and Treatment. J. Wertheimer.—p. 264.

Powdered Buttermilk in Treatment of Acute Digestive Disturbances of Nurslings. M. Péhu and P. Woringer.—p. 270.

Ocular Tests of A Hypovitaminosis in Children.—According to Caussade and his collaborators, the tests employed for the study of A avitaminosis can be classified in two groups: laboratory tests and clinical tests. The clinical methods are based on the ocular disturbances provoked by A avitaminosis. The authors disregard conjunctival or corneal xerosis and keratomalacia, because these disorders appear only in advanced insufficiencies. Of greater interest, because they appear earlier, are (1) the beginning xerosis revealed by the biomicroscope of Güllstrand and (2) beginning hemeralopia. They describe an adaptometer, which was devised by one of them (Thomas). In employing this adaptometer the child is placed in the dark chamber, where it has to look at a strongly illuminated screen for two minutes in order to neutralize the influence of the external light. Then the child is left in absolute darkness for thirteen minutes. Following this the child looks at the lighted page of the apparatus. By means of a diaphragm and of filters, the intensity of the illumination of the lettered page is gradually increased. The minimum illumination necessary to recognize the letters indicates the threshold of contrast in the child. To determine the normal threshold, tests were made on fifteen children who were free from hepatic and ocular disorders and who had been treated for fifteen days with vitamin A. To verify the sensitivity of the apparatus, control tests were made on twenty-five other children. Finally the authors employed their method for the detection of a hypovitaminosis on 210 children of school age. The studies were made during the winter. On the basis of their investigations they reach the conclusion that their method meets the requirements of the Hygiene Committee of the League of Nations, that it is easily employed and that it is of great sensitivity. In subjects who are free from hepatic and ocular disorders, it permits the detection of an existing A hypovitaminosis. Its employment in children of school age revealed that latent vitamin A insufficiency is relatively frequent, especially among the poor classes, in which the children receive an inadequate and unbalanced diet. The authors think that it would be interesting to make control tests during the summer, when because of the available vegetables and fruits the diet has a higher vitamin A content.

Nocturnal Enuresis.—Wertheimer first describes observations on the pollakiuria of nurslings. He found that micturitions were most frequent when the nurslings were in dorsal decubitus, somewhat less frequent when they were in the vertical position and least frequent when they were in ventral decubitus. There was on the average one micturition each in thirty-eight, fifty-three and 104 minutes, respectively, depending on whether the nurslings were in the dorsal, vertical or ventral position. In view of the relatively frequent coincidence between pollakiuria and nocturnal enuresis, the author suggests that nocturnal enuresis is likewise favored by the dorsal decubitus, that is, it is justified to suggest a "hyptiogenesis" (hyptios = lying on the back) of nocturnal enuresis. Moreover, if pollakiuria can be reduced by ventral decubitus, the same position might be helpful in the treatment of nocturnal enuresis. The author reports the clinical histories of four children ranging in age between 3 and 11. In all of them the nocturnal enuresis was successfully counteracted by the ventral position.

Schweizerische medizinische Wochenscrift, Basel

68: 1389-1406 (Dec. 24) 1938. Partial Index

Methods and Aims of Active Vaccination in Virus and Bacterial Infections. C. Hallauer.—p. 1389.
*Vitamin and Ferment Contents of Blood in Course of Infectious Diseases in High Mountains. J. E. Wolf.—p. 1393.
*Specific Catalytic Action of Trichlorethylene in Development of Allergic Dermatosis of Microbic Nature. E. Ramel.—p. 1395.
Periarteritis Nodosa Kussmaul-Mayer. A. von Albertini and H. Nabholz. —p. 1397.
Influence of Neurosympathetic Toxins on Processes of Infection and Immunity. W. Frei and E. Hess.—p. 1398.
Vitamin B_1 in Sciatica. E. Hegg.—p. 1399.

Vitamins and Ferments in Blood.—Wolf describes studies on the behavior of the vitamin content of the blood in high altitudes. He examined the vitamin content of the blood in healthy persons and patients on the day following their arrival from regions of low altitude and again after a stay of three or more weeks at the high altitude. He found that in the majority of patients with open pulmonary tuberculosis the vitamin A values of the blood were noticeably reduced but that after from three to five weeks in the high mountains a considerable increase could be observed. It is difficult to determine to what extent diet played a part in this increase, but that the high mountain climate as such played an important part is proved by the fact that even in cases in which the appetite was poor and nutrition difficult a considerable increase was observed. In healthy persons the vitamin A values of the blood were likewise higher after several weeks in the high mountains. Studies on the vitamin C content of the blood revealed that of thirty patients with pulmonary tuberculosis only nine had values that were too low; all others had high values, the majority even saturation values. These observations contradict those of the investigators who conclude, from a reduced elimination in the urine, that deficiencies exist. The author's observations on the blood do not prove that in pulmonary tuberculosis and perhaps also in other infectious diseases the vitamin C consumption is increased. He suggests that the fever of the infectious process might cause a retention and thus the reduced elimination in the urine would not permit the conclusion that a hypovitaminosis exists. It was found also that the vitamin C values of the blood increase under the influence of the high mountain climate. He detected normal or slightly increased total cholesterol values in many of his tuberculous patients, but he noticed a reduction in the cholesterol content of the serum in some of those with acute exudative processes. Like Loewy, he observed that the cholesterol values increased under the influence of the high altitude climate. Finally he gives his attention to the fat-splitting ferments, particularly lipase. On the basis of 250 tests of the lipase content of the serum he concludes that in the majority of cases the lipase values increase in the course of the stay at the high altitude. The height of the lipase titer to a considerable extent parallels the improvement in the pulmonary aspects. It is suggested that the increase in the lipase titer might be the manifestation of the immunity status of the tuberculous organism.

Trichlorethylene in Allergic Dermatosis.—Ramel discusses the meaning of the term allergy in dermatology and mentions the various manifestations of cutaneous allergy such as urticaria, eczema and parakeratosis psoriasiformis. The latter type of disorder has characteristics of psoriasis as well as of eczema, without being identifiable with either of these dermatoses. As the cutaneous manifestation of an allergic mechanism of microbic nature, parakeratosis psoriasiformis appeared until now as the composite effect of a morbid "antigen-antibody" syndrome in which two elements were necessary but sufficient. Recent investigations, however, demonstrated that this allergic reaction can be subordinated to the specific action of a third element acting in the manner of a catalyzer. The author demonstrates this on the basis of the clinical history of a factory worker who came in contact with trichlorethylene in the course of his work. Renewed contacts with the trichlorethylene elicited new attacks. On the basis of observations made on this patient, the author concludes that the trichlorethylene acts indirectly in the manner of a catalyzer. By means of this catalyzer it is possible to elicit at will an allergic cutaneous reaction the direct and indispensable cause of which appears to be a microbic agent. The microbic agent in the reported case was a hemolytic streptococcus which was obtained from the patches of parakeratosis psoriasiformis reactivated by means of the trichlorethylene test.

Biochemica e Terapia Sperimentale, Milan

25: 489-528 (Nov. 30) 1938. Partial Index

Sulfanilamide and Sulfur Preparations in Therapy of Experimental Typhoid. C. Callerio.—p. 500.
*Action of Vitamins on Hydremia and Chloridemia in Nurslings. M. Pincherle and G. Gelli.—p. 504.

Vitamins for Hydremia and Chloridemia in Nurslings.—Pincherle and Gelli made determinations of hydremia and chloridemia before and after the administration of vitamins in a group of twenty normal nurslings from 5 to 7 months of age, who were placed in four different groups. Each group was made up of two breast fed infants and three artificially fed with pasteurized cow's milk. Infants in the first and fourth groups had a daily intake of 40,000 international units of vitamin A (first group) and of 0.001 Gm. of vitamin D (fourth group) for fifteen successive days. Those in the second and third groups had a daily injection of 0.001 Gm. of crystallized B_1 vitamin (second group) and of 500 international units of ascorbic acid (third group) for ten successive days. The amount of water and sodium chloride in the blood was calculated by Bang and Rusniak's methods, respectively. The authors found that before administration of vitamins the amount of water and sodium chloride is normal in the blood of breast fed infants and increased in that of infants who are artificially fed. Vitamins administered have no effect on hydremia and chloridemia in breast fed infants whereas they cause diminution of hydremia and chloridemia up to normalization of the elements in the blood of infants who are artificially fed. The authors believe that the disturbances of the amount of water and sodium chloride in the blood of infants who are artificially fed are due to a disequilibrium of the endocrine and sympathetic nervous systems from avitaminosis and that both avitaminosis and the endocrine and sympathetic disturbances are controlled by the administration of vitamins.

Deutsche Zeitschrift für Chirurgie, Berlin

251: 281-448 (Dec. 10) 1938. Partial Index

Fractures of Tibial Condyles. J. Keyser.—p. 281.
*Postoperative Sickness. H. Paschoud.—p. 298.
*Etiology of Megaduodenum. W. Weiss.—p. 317.
Electric Burns in Four Children and Their Surgical Plastic Treatment. H. Lempke.—p. 331.
Juvenile Osteitis Tuberculosa Multiplex Cystoides with Special Consideration of Positive Tuberculin Anergy and the Blood Picture. E. Bähl. —p. 349.

The Postoperative Sickness.—According to Paschoud, the principal cause of the disturbances which constitute what Leriche termed "postoperative sickness" is to be seen in venous stasis. Every surgical intervention through a transient and local influence on the defense mechanisms of the tissues affects three important factors: temperature, pressure and moisture. The lowering of the temperature in the course of the operation affects particularly the local circulation and in a case of

abdominal operations the portal circulation. In the author's experience this cooling process involves even the deeper liver tissues. However, when the operative field is irradiated with infra-red rays at a temperature of 50 C. the tissues retain their temperature. Another important postoperative therapeutic measure in prevention of venous stasis and postoperative disturbances is the early postoperative activity of the patient. The infra-red rays are particularly useful in preventing vasomotor disturbances. Another effect of radiation is to be seen in hyperemia, which counteracts pathologic states resulting from venous stasis. Tissues subjected to the influence of inflammation, as in the case of appendicitis, cholecystitis, empyema or peritonitis, are not influenced to the same degree. The infra-red rays here affect only the circulation. The secondary hyperemia, result of the effect of ultraviolet rays, is effective for forty-eight hours after the operation and assures the best local stimulation of vasomotor function.

Etiology of Megaduodenum.—Weiss reports six cases of megaduodenum in members of the same family in three generations. He considers the incidence of the condition in his cases as a hereditary anomaly. In five of the patients he was able to demonstrate other developmental anomalies of the bowel and the kidneys. His observations support the views of Melchior and Nell to the effect that congenital cases of megaduodenum remain symptom free for many years and exhibit first symptoms under the influence of some unknown cause. Megaduodenum is frequently overlooked; many of the cases are treated for other illnesses, while in still others the condition is discovered in the course of an operation. In the presence of mild disturbances of peristalsis the condition may be treated conservatively. Formidable manifestations require operative intervention. The condition is not improved by a gastro-enterostomy, the second Billroth operation with terminolateral gastro-enterostomy or a duodenojejunostomy. The best results, according to the author, are to be obtained by the second Billroth procedure with y-anastomosis after Roux. The author is of the opinion that a careful investigation of the family history in every case of megaduodenum would reveal hereditary characteristics.

Münchener medizinische Wochenschrift, Munich

85: 1977-2016 (Dec. 23) 1938. Partial Index

Epidemiology of Field Fever (a Leptospirosis) in Southern Bavaria. W. Rimpau.—p. 1977.
*Clinical Aspects and Specific Therapy of Field Fever. G. Joerdens.—p. 1979.
Epidemic Keratoconjunctivitis in Munich and Surroundings. R. Schneider.—p. 1981.
Problem of Vaccine Therapy of Whooping Cough. H. Petersen.—p. 1986.
Preventable, Violent Deaths in Nurslings and Young Children. Füsslin.—p. 1988.
Relations Between Alcohol Odor of Organs of Cadaver and Blood Alcohol Values. G. Hansen.—p. 1989.
Field Fever in Rural Practice. W. Lohmüllar Jr.—p. 1993.

Field Fever.—Joerdens reports his observations on eighteen patients with field fever, a spirochetosis, which in previous reports has been designated also as "harvest" fever. Sixteen of the patients had done harvest work but only a few had worked in damp fields and meadows. One patient, a soldier, developed field fever twelve days after return from a furlough, during which he had assisted in harvesting. Another patient, a baker, had not done harvest work, but he had been bathing in a river of the region in which cases of field fever had occurred. The patients suddenly developed high fever, usually with chills; they complained of severe headaches, sensations of dizziness and pains in the limbs. Nearly all the patients were stuporous during the first few days and many had attacks of vomiting, abdominal pains and diarrhea. A characteristic sign at the onset of the disease is a conjunctivitis of varying severity. The blood pressure was low and this hypotension persisted in some of the patients after the discharge from the hospital. During convalescence, bradycardia was frequently observed. In two patients an exanthem resembling that of measles appeared, but it subsided again in the course of forty-eight hours. Serologic examinations of the blood proved positive in all cases. In one case Leptospira was cultured from the blood on the second day of the disease. All the patients recovered in the course of two or three weeks. Six of them were treated with a field fever (rabbit) serum. Three patients were given one intramuscular injection of 10 cc. each; in the other three the serum injection was repeated after two or three days. On the basis of his favorable experiences with the field fever serum the author recommends its use, particularly during the early period of the disease. He points out that Rimpau regards field fever as a nonicteric form of Weil's disease. Both disorders are spirochetal fevers and their clinical course is similar.

Nervenarzt, Berlin

11: 609-664 (Dec. 15) 1938. Partial Index

Reduction of Intracranial Pressure. H. Sprockhoff.—p. 609.
Neurologic Diagnosis of Tumors of Third Ventricle. E. Oldberg and Louise Eisenhardt.—p. 614.
*Insulin Shock and Eye. R. Schmidt.—p. 615.
Three New Roentgenographic Methods That Are Important for Neurology. B. G. Ziedses des Plantes.—p. 619.
Disappearance of Genuine Epilepsy After Epidemic Encephalitis. A. Werner.—p. 623.

Insulin Shock and the Eye.—Schmidt says that, since insulin has been introduced into the treatment of schizophrenia, numerous reports have appeared about changes that develop in different organs. Even ocular disturbances, particularly pupillary disorders, have been observed and so the author was induced to make studies on the eyes of schizophrenic patients during insulin shock therapy. His investigations were made on ninety-one patients in the course of 658 attacks of shock. To describe the behavior of the eye under insulin action the more clearly, he differentiates four stages. The first stage extends over the period from the introduction of the insulin to the onset of shock. The second stage is the period of shock which begins, according to the author's opinion, when the patient fails to respond to calling and pinching. The third stage is the period of deep shock during which all reflexes are abolished. The fourth stage covers the period from the administration of sugar to complete awakening. Summarizing his observations on the ocular changes during the various phases of insulin shock, the author says that all patients showed a loss of tonus of the external eye muscles during the third stage, impairment of the sensitivity of the conjunctiva and cornea during the second, the third and the beginning of the fourth stage, and pupillary changes during all four stages. In some of the patients there appeared during the first three stages peculiar positions of the eyes, during the first stage a horizontal nystagmus and during the second, third and fourth stages a hyperemia of the retina and of the choroid. The intra-ocular pressure, the refraction, the oculocardiac reflex and the pressure of the retinal vessels showed no deviation from the normal. The reported changes prove that the eyes participate in the processes elicited in the organism by insulin shock. It is noteworthy that the manifestations on the visual organ are not uniform and that an alteration of the sympathetic equilibrium in a certain direction is not observable. None of the patients showed ocular changes traceable to the effect of insulin after the shock therapy was completed.

Zeitschrift für Immunitätsforschung, Jena

94: 367-532 (Dec. 12) 1938. Partial Index

Experimental Investigations on Guinea Pigs on Pathogenesis of Pneumonia. H. Grossmann and A. Terbrüggen.—p. 367.
Aspects of Blood in Experimental Infections and Chemotherapy. A. Feldt and K. Schäfer.—p. 396.
Studies on Antigenic Characteristics of Spirochaeta Icterohaemorrhagiae. E. Carlinfanti.—p. 426.
*Immunity Against Anthrax. G. Ivánovics.—p. 436.
Immunity of Newly Born Mammals. L. Schneider and J. Szathmáry.—p. 458.
Further Observations on Biology of Gas Bacilli (Bacillus Perfringens). H. Meisel.—p. 470.
Complement Fixation Reaction in Leptospirosis. S. Papageorgiu.—p. 489.

Immunity Against Anthrax.—Ivánovics cites experiments by other investigators which proved that the capsule of anthrax bacilli has antigenic characteristics which differ from those of the body of the bacilli. It was demonstrated that the protective action of the serum was dependent entirely on its content in antibodies from the capsule and that the antibodies from the soma were of no importance in this respect. After reviewing immunization experiments with the R variant of the anthrax bacilli by Bail, the Stamatins and Sterne, Ivánovics describes

his own studies on the mechanism of anthrax immunity. He shows that the immunity of rabbits vaccinated with sterilized edema fluid has no connection with the antibody of the capsule. The capsule antibody could not be demonstrated in the blood of the animals so immunized nor was it possible to counteract the immunity of the animals with purified capsule antibody. Mice that were vaccinated with 1 cc. of serum from an immunized rabbit showed hardly greater resistance against anthrax infection than the untreated controls. Rabbits can be successfully immunized with the noncapsulated R variant of the anthrax bacillus. The edema fluid from a guinea pig that has died after infection with the R variant likewise effects immunization in rabbits; in this edema fluid even the highly sensitive serologic examination fails to demonstrate the specific substance of the capsule of the anthrax bacillus. Mice could be immunized neither with edema fluid nor with large quantities of killed capsulated anthrax bacilli.

Zeitschrift für Urologie, Leipzig

32: 777-835 (No. 12) 1938. Partial Index

Clinical Differentiation of Cases with Incipient Renal Tuberculosis from Cases with Nonspecific Papillitis Necroticans. H. Schneider.—p. 777.
*Operation for Coral Calculus. K. Heusch.—p. 800.
Hemorrhages from Kidneys Congested as Result of Constricting Vessels. H. Schneider.—p. 804.

Operation for Coral Calculus.—Heusch believes that pyelotomy is preferable to nephrotomy but admits that in some instances, such as in cases of a parenchymal calculus or of a fixed coral calculus, an incision into the renal parenchyma cannot always be avoided. However, it is gratifying when even in these conditions pyelotomy can be done instead of nephrotomy. This applies even to calculi that are shaped like antlers. If the anatomic conditions favor a pyelotomy, neither the size nor the extensive ramifications of the coral calculus are a contraindication to pyelotomy. The conditions which favor pyelotomy in the presence of a large anchored coral calculus are (1) good mobility of the pedicled kidney and (2) considerable size and width of the extrarenal portion of the pelvis of the kidney. Under these conditions the technical measures consist in breaking up the easily accessible coral calculus and then removing the fragments. The author reports the clinical history of a woman, aged 43, in whom a large coral calculus was removed by pyelotomy. The kidney was exposed by a slanting incision into the flank. It was moderately adherent to the surroundings, but it was easily pedicled and lifted out. After the kidney had thus been exposed its pelvis was visible and this was opened by a long pyelotomy. After the pyelotomy opening had been spread apart by holding threads, the conical end portion of the coral could be extracted. An attempt to remove the remaining portions of the coral by means of the thumb and forefinger failed and so the calculus was crushed into several pieces and these were removed by means of forceps. The removal was controlled by the palpating finger. A thorough irrigation concluded the cleansing of the renal pelvis. A transrenal fistula was made and after the patency of the ureter had been tested the renal pelvis was sutured. The postoperative course was uneventful. The fistula closed quickly. An examination several months later proved that the patient was free from complaints and that the function of the kidney was excellent.

Problemy Tuberkuleza, Moscow

Pp. 1-152 (No. 6) 1938. Partial Index

Properties and Methods of Separation of Active Principle of Extract of Leaves of Nut Tree. F. L. Shpanir, D. L. Yaklinskaya, L. I. Serebrennikova and T. Ya Aronovich.—p. 3.
Effect of Lymph on Tubercle Bacilli Cultures. A. A. Kharkov.—p. 11.
Passive Transference of Skin Tuberculosis Allergy Through Blood Transfusion. P. Ya. Polyak.—p. 20.
Primary Tuberculous Effect in Calves. P. I. Kokurichev.—p. 26.
Electrocardiographic and Microscopic Studies of Heart in Tuberculous Patients. F. B. Lifshits.—p. 36.
Certain Anatomopathologic Peculiarities of Tuberculosis in Puberty. S. A. Katsnelson.—p. 49.
*Tuberculosis in Malarial Patients. Ya. M. Kaziev.—p. 60.

Tuberculosis in Malarial Patients.—According to Kaziev there exist in the literature two opposing views with regard to the antagonism of tuberculosis and malaria. A number of authors, including Schoenlein, Mutzner and Shirokogorov, point to the rarity of tuberculous lesions in malarial patients. Another group of authors maintains the opposite, i. e. that malaria aggravates the course of the tuberculous infection. Among the 5,580 patients admitted to the tuberculosis dispensary of the region of Baku, where malaria is endemic, there were 342 malarial patients with pulmonary tuberculosis in various stages. The author studied the incidence of malaria in a group of 1,212 patients with open pulmonary tuberculosis. There were 338 (27 per cent) who likewise had malaria. Thirty-three had recently acquired malaria, forty contracted malaria in the past six months and forty-four within one year, while 254 (75.1 per cent) had malaria for more than one year. By careful study of their histories it was possible to ascertain that in 165 (48.8 per cent) malaria preceded tuberculosis, while in 173 (51.2 per cent) malaria was acquired after pulmonary tuberculosis. The similarity in the symptoms of the two diseases may lead to diagnostic errors. However, the diagnosis of malaria can be established on the history of typical malarial attacks which yielded to specific treatment. Fifty-seven per cent of the tuberculous patients presented a fibrous or fibrous productive form of pulmonary tuberculosis, while cavities were present in 60 per cent. The remaining 43 per cent included severe pneumonic, infiltrative and other forms of pulmonary tuberculosis. Observations of this group over a period of five years revealed progression of the tuberculous process in 112 (33.1 per cent), marked aggravation in twenty-two (6.6 per cent), a stationary course in forty-eight (14.2 per cent), improvement and arrest in 135 (39.9 per cent) and a complete arrest in twenty-one (6.2 per cent). A study of histories of 369 patients dying of pulmonary tuberculosis in 1934 and of fifty-eight dying in 1935 revealed that 17 per cent were also afflicted with malaria. In order to throw light on the course of tuberculosis developing in patients who had had malaria for a long time the author studied a group of 338 open cases of pulmonary tuberculosis. In 165 of these, malaria preceded tuberculosis by from three to five years. Sixty-four and two-tenths per cent of these presented a mild course with predominance of fibrosis. It appeared therefore that the course of pulmonary tuberculosis in old malarial patients runs a milder course. However, in 21.1 per cent of the cases there was a progression of the disease. In the reverse instance, that is, when a tuberculous patient develops malaria, the tuberculous process becomes aggravated. A study of such a group of 173 patients demonstrated that 57.2 per cent of these showed progression and 13.3 per cent remained stationary, while 29.5 per cent improved. On the basis of his observations the author cannot support the theory of antagonism between the two infections since more than one half of the cases in which two infections coexisted showed an aggravation of the tuberculous process.

Acta Medica Scandinavica, Stockholm

97: 163-425 (Dec. 13) 1938. Partial Index

Pasteurella in Sputum of Patient Suffering from Chronic Purulent Bronchitis. M. D. J. Mulder.—p. 165.
*Determination of Hemoglobin in Undiluted Blood. H. Hesse.—p. 207.
Frequency and Geographic Distribution of Pernicious Anemia in Sweden. N. G. Nordenson, Elsa Segerdahl, B. Strandell and C. Wallman-Carlsson.—p. 222.
*Elimination of Cholic Acids in Healthy Animals. B. Josephson, G. Jungner and A. Rydin.—p. 237.
*Eliminaton of Cholic Acids in Experimental Jaundice. G. Jungner, A. Rydin and B. Josephson.—p. 254.
Investigations on Branch Block. E. Rud.—p. 265.
Significance of Zinc Content of Insulin Preparations. E. H. Vogelenzang and L. A. Hulst.—p. 307.
Indoxylacetyl Compounds as Cause of Blue Fluorescence of Urine Under Ultraviolet Light. G. A. Kreuzwendedich von dem Borne.—p. 311.
Hypoproteinemia in Chronic Pemphigus. K. Brøchner-Mortensen.—p. 329.
Osteomalacia as Explanation of Dwarfism. K. Secher.—p. 335.

Determination of Hemoglobin in Undiluted Blood.—Hesse says that Philipsen suggested to him in 1935 that the hemoglobin could be determined in the undiluted blood by hemolyzing the specimen with saponin and simultaneously reducing it with sodium thiosulfate and then placing it into a wedge chamber of capillary height; the wedge of blood color can thus be compared with a standard color. On the basis of this suggestion a hemometer was developed and the exactness of the new method was tested in the laboratory in Copenhagen. The author describes and illustrates the capillary wedge hemometer. He shows that, since the quantity of the blood specimen does not

have to be determined, the mouth pipet can be replaced by a hand pipet. By exerting pressure with the finger on the rubber rim, the first drop of blood can be drawn up and more blood flows after, until the anterior chamber is filled. The reagent, which is added, is a powder consisting of a mixture of saponin, sodium thiosulfate and sodium oxalate. By this addition the blood specimen is hemolyzed, reduced and stabilized. By experiments it was demonstrated that within certain limits the quantity of the powder is without influence on the results and for this reason exact measurement of the powder is unnecessary. As soon as the specimen is clear, the capillary chamber is filled; that is, by capillary attraction the blood runs under the wedge piece and the color can be compared at once. In a historical review the author shows that the principle of the capillary chamber was suggested at about the turn of the century but for technical reasons was not perfected. After describing the technical measures that were necessary to insure exact results, the author reviews comparative tests which revealed that the new wedge chamber hemometer for undiluted blood meets all clinical and many scientific requirements.

Elimination of Cholic Acids in Healthy Animals.—Josephson and his associates show that, although the elimination of bile acids after oral as well as after intravenous administration has been studied by several investigators, some important aspects of this problem still remain unsolved. They decided to study the cholic acid content in blood and bile and to observe the correlation between the blood content and the secreted amounts. They wanted to determine the elimination rate for cholic acid in blood and bile in healthy cats and rabbits, since they intended to use these animals for investigations of the cholic acid elimination under pathologic circumstances. They also made an attempt to determine to what degree an injected amount of unconjugated bile salts could be conjugated in the organism. Further they compared the effects of the injection of cholic acid into a peripheral vein and into a vein of the portal system. Finally they studied the ways in which the bile acids are eliminated from the blood. The experiments revealed that, although absorption is effected for the greatest part in the liver, the walls of the blood vessels also play an important part in the absorption of the bile acids, for the results obtained in animals in which the hepatic vessels had been ligated can be explained in no other way. The results after the injection into the portal vein are more difficult to explain. After this type of injection the liver cells suddenly are offered blood, which is a rather concentrated bile salt solution. The most probable explanation of the obviously delayed absorption of bile salts after injection of large doses into the portal vein seems to be either that the liver cells were intoxicated by this overwhelming bile salt supply or that their excreting ability was at once exhausted. In this manner they may become immobilized and the animals may behave like those in which the liver vessels are ligated. This explanation is supported by the fact that when small doses are injected intraportally the reaction was the same as after peripheral injection. Experiments with animals treated with india ink and thorium dioxide sol indicate that the delayed excretion after intraportal injection of large doses probably cannot be explained by a blockade of the reticulo-endothelial cells, since animals so treated reacted normally. The fact that the cholic acid content increases also in peripheral blood during the resorption of great amounts of bile salts from the intestine may have the same cause as the delayed absorption after injection into the portal vein. Bile acids given orally in large amounts, to obtain an abundant flow of bile, may have an effect quite the opposite to that desired if the supply has been too ample. If they are injected intravenously no risk of that type seems to exist. Discussing the observation that, during the initial period of about thirty minutes after the injection of sodium cholate the bile acids are excreted in unconjugated form, the authors say that gradually more and more of the excreted acids were conjugated even when their concentration in the bile still was far above the normal. This demonstrates that the conjugation of the bile acids by the formation of their peptide linkage is a time-consuming process and therefore probably of enzymatic character. After citing observations by several other investigators, the authors suggest that enzymatic powers may be the cause as well of the peptide synthesis as of the normally occurring synthesis of conjugated bile acids. The reported experiments have shown that unconjugated bile acids, when rapidly excreted, may escape from this enzymatic power.

Elimination of Cholic Acids in Experimental Jaundice.—In this report the same investigators (Jungner, Rydin and Josephson) report their studies on the elimination rate when the tissues are more or less loaded with bile salts. They observed the elimination in previously jaundiced animals, in which they also had ligated the afferent liver vessels before the injection of the bile salt. In the summary they say that the elevation of the bile acids in the blood in obstructive jaundice found by other authors in dogs was confirmed in rabbits and cats. The fact that this elevation appears later in cats than in rabbits was explained by the different elasticity of the bile ducts of these two species. The authors also confirmed the observation of other investigators that the augmentation of the bile salts after cholate injections is much greater in these than in normal animals and that the elimination is greatly delayed. The elimination rate follows a typical curve. An approximate calculation of the total amount of cholates in the blood of the animals four minutes after the injection, however, shows that even in obstructive jaundice a considerable part of the supplied salt disappears from the blood immediately after the injection. In this short time scarcely any urine was formed and an excretion of bile salts through the kidneys could not have taken place. In the preceding paper they demonstrated that the rapid disappearance of cholates in healthy animals could depend not only on fixation in the liver but also on a surface adsorption on the walls of the blood vessels. In the animals with obstructive jaundice this surface adsorption did not take place, which was demonstrated by experiments on cats with both obstructive jaundice and excluded liver circulation. In these experiments the cholate quantity remaining in the blood was about the same as the injected quantity. It seems that the tissues and the walls of the blood vessels were saturated with bile salts. Compared with the experiments on animals with obstructive jaundice and maintained liver circulation, these animals demonstrated the capacity of the liver to fix bile acids even in severe jaundice. The cholic acid content of the blood of animals with toxic hepatitis caused by phosphorus and by carbon tetrachloride was found to be definitely higher than normal but not of the same magnitude as in obstructive jaundice. The elimination curve of injected cholic acids was different from the normal elimination as well as from that of the animals with obstructive jaundice. The first augmentation of cholic acid in the blood after injection was of normal magnitude but the subsequent decrease was delayed. The delay found in the excretion agreed fairly well with the results of the microscopic examinations. This indicates that in hepatitis of this type the tissues still have the ability to absorb the bile salts but that their excretion is diminished as a result of the injury to the hepatic parenchyma. Altogether it seemed that the cholate concentration of the blood after the injections was much more in correspondence with the condition of the liver than was the concentration before the injection. The values found after injection of small doses corresponded fairly well to those after large ones. For these reasons the authors believe that analysis of the cholate concentration in the blood of patients after injections of sodium cholate can serve as a functional test of the liver.

Nordisk Medicinsk Tidskrift, Stockholm

16: 1889-1932 (Dec. 3) 1938

*Bacteriologic Examinations in Pneumonia in Oslo. E. Waaler and K. Halvorsen.—p. 1889.
Handwriting and Analysis of Personality. K. G. Dahlgren.—p. 1893.
Number of Inmates in Safety Institution in Nykøbing with Special Regard to Psychopathic Patients. K. E. J. Lemmergaard and J. Ravn.—p. 1898.

Bacteriologic Examinations of Pneumonias in Oslo.—Waaler and Halvorsen typed pneumococci in 109 of the 142 cases of pneumonia from Ullevaal Hospital from September 1937 to May 1938. Hemolytic streptococci were isolated in nine cases, Staphylococcus aureus in one, Friedländer's bacillus in two, and a mixture of hemolytic streptococci and other microbes in five; no pathogenic organism was identified in sixteen, mainly because of contamination of material. The most frequent types were III, VII, XVIII, I, IV, X and XII, in the order named. The authors find a marked variation in the incidence of types from year to year.